



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

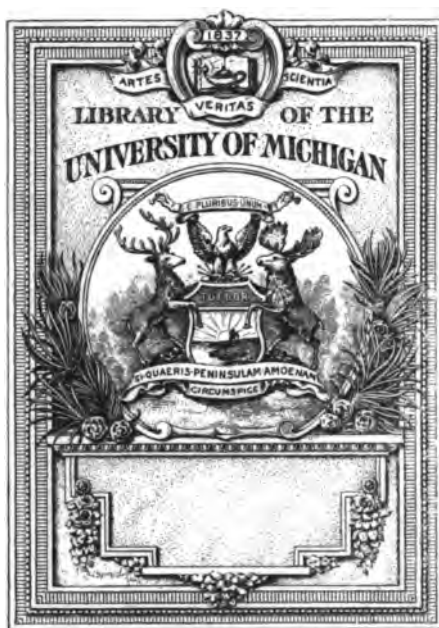
Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>



QB

8

45

THE
AMERICAN EPHEMERIS
AND
NAUTICAL ALMANAC

FOR THE YEAR

1908

FIRST EDITION

PUBLISHED BY AUTHORITY OF CONGRESS

WASHINGTON
BUREAU OF EQUIPMENT

1904

PREFACE.

The general arrangement of the *American Ephemeris and Nautical Almanac*, with few slight changes, remains the same with the volume for the year 1900.

The Ephemeris is divided into four parts, as follows:

Part I, *Ephemeris for the Meridian of Greenwich*, which gives the ephemerides of the Sun and Moon, the geocentric and heliocentric positions of the major planets, the Sun's co-ordinates, and other fundamental astronomical data for equidistant intervals of Greenwich mean time.

Part II, *Ephemeris for the Meridian of Washington*, which gives the ephemerides for the fixed stars, Sun, Moon, and major planets for transit over the meridian of the new Naval Observatory, Washington. The mean places of the fixed stars and the data for their reduction are also included in this part.

Part III, *Phenomena*, which contains predictions of phenomena to be observed, with data for their computation. Washington mean time for the meridian of the new Naval Observatory is used throughout this part except in a few cases, notably those of eclipses, where Greenwich mean time seems more convenient.

Part IV, *Star numbers, apparent places of stars, and other data based on the Constants of the Paris Conference of 1896*, which gives precession, obliquity, etc., Besselian star-numbers, independent star-numbers, ephemerides of five northern circumpolar stars, and ephemerides of twenty-five other stars whose apparent places differ from those given in Part II.

WALTER S. HARSHMAN,
Professor of Mathematics, U. S. Navy,
Director Nautical Almanac.

WASHINGTON, *December, 1904.*

[Eph 08]

III

CONTENTS.

Corrections	Page vi
Chronological Eras and Cycles	vii
Symbols and Abbreviations	viii

PART I—EPHEMERIS FOR THE MERIDIAN OF GREENWICH.

	Pages of Each Month
Ephemeris of the Sun	I-III
Ephemeris of the Moon	IV-XII
Phases of the Moon	XII
Lunar Distances	XIII-XVIII

	Page
Geocentric Ephemerides of the Planets Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune	218
Heliocentric Ephemerides of the Planets Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune	250
Sun's Co-ordinates	272
Moon's Longitude and Latitude	280
Moon's Equator, Mean Longitude, etc.	284
Moon's Libration; Sun's Aberration and Horizontal Parallax	285
Precession, Nutation, Obliquity, etc.	286
Nutation, Terms of Short Period in the	287

PART II—EPHEMERIS FOR THE MERIDIAN OF WASHINGTON.

BESSEL's Formulæ for Star-Reductions, Constants of <i>Struve</i> and <i>Peters</i>	290
Besselian and Independent Star-Numbers, " " " "	291
Besselian and Independent Star-Numbers, exclusive of short period terms, for every tenth sidereal day	303
Mean Places of Standard Stars for 1908.0	304
Apparent Places of Five Circumpolar Stars	312
Apparent Places of remaining Standard Stars	324
Solar Ephemeris	400
Moon-Culminations	408
Transit-Ephemerides of the Planets Mercury, Venus, Jupiter, Saturn, Uranus, Neptune	416

PART III—PHENOMENA.

Eclipses	434
Moon's Phases, Apogee, Perigee, and Greatest Libration	442
Mean Places of Stars Occulted by the Moon	443
Elements for the Prediction of Occultations	447
Occultations Visible at Washington	482
Disks of Mercury, Venus, and Mars	484
Satellites of Jupiter, Saturn, Uranus, and Neptune	487
Phenomena, Planetary Configurations	516
Positions of Observatories	520

PART IV—APPARENT PLACES OF STARS, STAR-NUMBERS, ETC., BASED ON THE CONSTANTS OF THE PARIS CONFERENCE.

BESSEL's Formulæ for Star-Reductions	526
Precession Nutation, Obliquity, etc.	527
Besselian and Independent Star-Numbers	528
Apparent Places of Five Circumpolar Stars	540
Apparent Places of Twenty-five Standard Stars	552
On the Arrangement and Use of <i>The American Ephemeris and Nautical Almanac</i>	557

APPENDIX.

On the Construction of <i>The American Ephemeris and Nautical Almanac</i> for 1908	583
--	-----

TABLES.

Table I.—Correction of Lunar Distances for Second Differences in Moon's Motion	588
Table II.—Reduction of Sidereal to Mean Solar Time	589
Table III.—Reduction of Mean Solar to Sidereal Time	592
Table IV.—Latitude by Observation of the Altitude of Polaris	595

CORRECTIONS.

Ephemeris, 1905. (In some copies of first edition only.)

Page.

203, Last line, Upper Transit

for 26.0

read 25.5

1.81

1.80

Ephemeris, 1906. (In some copies of first edition only.)

Preface, Part IV

for "four northern and one southern"

read "five northern."

484, θ , for December

for 151°

read 208°

158

202

160

199

163

196

166

193

170

189

174

185

560, First line

for 2nd

read 15th

567, Pages 312-323

for σ Octantis

read 6 B Ursæ Minoris

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1908, WHICH COMPRISES THE LATTER PART OF THE 132D AND THE BEGINNING OF THE 133D YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO—

The year 6621 of the Julian Period;

- “ 7416–7417 of the Byzantine era, the year 7417 commencing on September 1;
- “ 5668–5669 of the Jewish era, the year 5669 commencing on September 26, or, more exactly, at sunset on September 25;
- “ 2661 since the foundation of Rome, according to VARRO;
- “ 2655 since the beginning of the era of NABONASSAR, which has been assigned to Wednesday, the 26th of February of the 3967th year of the Julian Period; corresponding, in the notation of chronologists, to the 747th, and, in the notation of astronomers, to the 746th year before the birth of CHRIST;
- “ 2684 of the Olympiads, or the fourth year of the 671st Olympiad, commencing in July, 1908, if we fix the era of the Olympiads at $775\frac{1}{2}$ years before CHRIST, or near the beginning of July of the year 3938 of the Julian Period;
- “ 2220 of the Grecian era, or the era of the SELEUCIDÆ, which began near the vernal equinox of the year, — 311 = B. C. 312, = 4402 of the Julian Period;
- “ 1624 of the era of DIOCLETIAN;
- “ 2568 of the Japanese era and to the 41st year of the period entitled “Meiji.”

The year 1326 of the Mohammedan era, or the era of the Hegira, begins on the 4th day of February, 1908.

The first day of January of the year 1908 is the 2,417,942d day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letters	E D	Solar Cycle	13
Epact	27	Roman Indiction	6
Lunar Cycle or Golden Number	9	Julian Period	6621

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, ETC.

☉	The Sun.	♂	Mars.
☾	The Moon.	♃	Jupiter.
☿	Mercury.	♄	Saturn.
♀	Venus.	♅	Uranus.
♁	The Earth.	♆	Neptune.

SIGNS OF THE ZODIAC.

Spring Signs.	{	1.	♈	Aries.	Autumn Signs.	{	7.	♎	Libra.
		2.	♉	Taurus.			8.	♏	Scorpius.
		3.	♊	Gemini.			9.	♐	Sagittarius.
Summer Signs.	{	4.	♋	Cancer.	Winter Signs.	{	10.	♑	Capricornus.
		5.	♌	Leo.			11.	♒	Aquarius.
		6.	♍	Virgo.			12.	♓	Pisces.

ASPECTS.

- ♌ Conjunction, or having the same Longitude or Right Ascension.
- ☐ Quadrature, or differing $\pm 90^\circ$ in Longitude or Right Ascension.
- ♌ Opposition, or differing 180° in Longitude or Right Ascension.

ABBREVIATIONS.

♌	Ascending Node.	°	Degrees.
♎	Descending Node.	'	Minutes of Arc.
N.	North.	"	Seconds of Arc.
S.	South.	h	Hours.
E.	East.	m	Minutes of Time.
W.	West.	s	Seconds of Time.

PART I

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF GREENWICH.

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
Wed.	1	^h 18 ^m 42 ^s 10.45	^s 11.061	[°] S. 23 ['] 5 ["] 46.7	["] + 11.14	['] 16 17.85	^s 71.09	^m 3 ^s 10.36	^s 1.200
Thur.	2	18 46 35.75	11.048	23 1 5.6	12.29	16 17.85	71.05	3 39.00	1.188
Frid.	3	18 51 0.74	11.034	22 55 56.8	13.43	16 17.85	71.00	4 7.36	1.174
Sat.	4	18 55 25.37	11.019	22 50 20.8	+ 14.57	16 17.85	70.95	4 35.36	1.158
SUN.	5	18 59 49.62	11.002	22 44 17.4	15.71	16 17.85	70.90	5 2.97	1.141
Mon.	6	19 4 13.45	10.983	22 37 46.8	16.83	16 17.84	70.83	5 30.16	1.123
Tues.	7	19 8 36.82	10.962	22 30 49.4	+ 17.95	16 17.82	70.77	5 56.91	1.104
Wed.	8	19 12 59.72	10.942	22 23 25.2	19.05	16 17.80	70.71	6 23.17	1.083
Thur.	9	19 17 22.09	10.921	22 15 34.7	20.15	16 17.78	70.65	6 48.91	1.061
Frid.	10	19 21 43.91	10.898	22 7 17.8	+ 21.24	16 17.75	70.58	7 14.11	1.038
Sat.	11	19 26 5.17	10.874	21 58 35.0	22.31	16 17.72	70.50	7 38.75	1.014
SUN.	12	19 30 25.84	10.849	21 49 26.5	23.38	16 17.68	70.42	8 2.79	0.989
Mon.	13	19 34 45.90	10.823	21 39 52.5	+ 24.44	16 17.64	70.34	8 26.23	0.963
Tues.	14	19 39 5.32	10.796	21 29 53.3	25.48	16 17.59	70.26	8 49.03	0.936
Wed.	15	19 43 24.09	10.768	21 19 29.3	26.51	16 17.53	70.17	9 11.18	0.909
Thur.	16	19 47 42.18	10.740	21 8 40.7	+ 27.52	16 17.47	70.08	9 32.66	0.881
Frid.	17	19 51 59.60	10.711	20 57 27.9	28.53	16 17.40	69.99	9 53.46	0.852
Sat.	18	19 56 16.33	10.682	20 45 51.0	29.52	16 17.33	69.89	10 13.58	0.823
SUN.	19	20 0 32.34	10.653	20 33 50.5	+ 30.50	16 17.25	69.79	10 32.98	0.793
Mon.	20	20 4 47.62	10.623	20 21 26.7	31.47	16 17.16	69.68	10 51.65	0.763
Tues.	21	20 9 2.18	10.592	20 8 39.9	32.42	16 17.07	69.58	11 9.61	0.732
Wed.	22	20 13 16.00	10.560	19 55 30.5	+ 33.36	16 16.97	69.48	11 26.82	0.701
Thur.	23	20 17 29.05	10.528	19 41 58.8	34.28	16 16.87	69.37	11 43.26	0.670
Frid.	24	20 21 41.35	10.496	19 28 5.2	35.18	16 16.76	69.27	11 58.96	0.638
Sat.	25	20 25 52.88	10.464	19 13 49.8	+ 36.07	16 16.64	69.16	12 13.90	0.606
SUN.	26	20 30 3.62	10.432	18 59 13.4	36.95	16 16.52	69.05	12 28.05	0.574
Mon.	27	20 34 13.61	10.400	18 44 16.1	37.83	16 16.40	68.94	12 41.44	0.541
Tues.	28	20 38 22.80	10.367	18 28 58.2	+ 38.67	16 16.27	68.83	12 54.04	0.508
Wed.	29	20 42 31.19	10.334	18 13 20.3	39.49	16 16.14	68.71	13 5.83	0.475
Thur.	30	20 46 38.77	10.301	17 57 22.6	40.30	16 16.00	68.59	13 16.84	0.442
Frid.	31	20 50 45.58	10.267	17 41 5.6	41.10	16 15.86	68.48	13 27.05	0.409
Sat.	32	20 54 51.55	10.233	S. 17 24 29.7	+ 41.88	16 15.72	68.37	13 36.45	0.375

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0^s.19 from the sidereal time.
The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
Wed.	1	h m s 18 42 9.88	s 11.057	° ' " S. 23 5 47.3	" + 11.13	m s 3 10.29	s 1.200	h m s 18 38 59.60
Thur.	2	18 46 35.09	11.044	23 1 6.3	12.28	3 38.93	1.188	18 42 56.16
Frid.	3	18 50 59.99	11.030	22 55 57.7	13.42	4 7.28	1.174	18 46 52.71
Sat.	4	18 55 24.54	11.015	22 50 21.8	+ 14.56	4 35.27	1.158	18 50 49.27
SUN.	5	18 59 48.70	10.998	22 44 18.6	15.70	5 2.87	1.141	18 54 45.83
Mon.	6	19 4 12.45	10.979	22 37 48.2	16.82	5 30.06	1.123	18 58 42.39
Tues.	7	19 8 35.74	10.959	22 30 51.0	+ 17.94	5 56.80	1.104	19 2 38.94
Wed.	8	19 12 58.56	10.939	22 23 27.1	19.04	6 23.06	1.083	19 6 35.50
Thur.	9	19 17 20.85	10.918	22 15 36.8	20.14	6 48.79	1.061	19 10 32.06
Frid.	10	19 21 42.61	10.895	22 7 20.2	+ 21.23	7 13.99	1.038	19 14 28.62
Sat.	11	19 26 3.79	10.871	21 58 37.7	22.30	7 38.62	1.014	19 18 25.17
SUN.	12	19 30 24.39	10.846	21 49 29.5	23.37	8 2.66	0.989	19 22 21.73
Mon.	13	19 34 44.38	10.820	21 39 55.8	+ 24.43	8 26.09	0.963	19 26 18.29
Tues.	14	19 39 3.73	10.793	21 29 57.0	25.47	8 48.88	0.936	19 30 14.85
Wed.	15	19 43 22.44	10.765	21 19 33.3	26.50	9 11.04	0.909	19 34 11.40
Thur.	16	19 47 40.48	10.737	21 8 45.0	+ 27.51	9 32.52	0.881	19 38 7.96
Frid.	17	19 51 57.84	10.708	20 57 32.5	28.52	9 53.32	0.852	19 42 4.52
Sat.	18	19 56 14.51	10.679	20 45 55.9	29.51	10 13.44	0.823	19 46 1.07
SUN.	19	20 0 30.47	10.650	20 33 55.8	+ 30.49	10 32.84	0.793	19 49 57.63
Mon.	20	20 4 45.70	10.620	20 21 32.3	31.46	10 51.51	0.763	19 53 54.19
Tues.	21	20 9 0.21	10.590	20 8 45.8	32.41	11 9.47	0.732	19 57 50.74
Wed.	22	20 13 13.98	10.559	19 55 36.8	+ 33.35	11 26.68	0.701	20 1 47.30
Thur.	23	20 17 26.99	10.528	19 42 5.4	34.27	11 43.13	0.670	20 5 43.86
Frid.	24	20 21 39.25	10.496	19 28 12.1	35.17	11 58.83	0.638	20 9 40.42
Sat.	25	20 25 50.75	10.463	19 13 57.1	+ 36.06	12 13.78	0.606	20 13 36.97
SUN.	26	20 30 1.46	10.430	18 59 21.0	36.94	12 27.93	0.574	20 17 33.53
Mon.	27	20 34 11.41	10.398	18 44 24.0	37.82	12 41.33	0.541	20 21 30.08
Tues.	28	20 38 20.57	10.365	18 29 6.4	+ 38.66	12 53.93	0.508	20 25 26.64
Wed.	29	20 42 28.93	10.332	18 13 28.8	39.48	13 5.73	0.475	20 29 23.20
Thur.	30	20 46 36.49	10.299	17 57 31.4	40.29	13 16.74	0.442	20 33 19.75
Frid.	31	20 50 43.27	10.265	17 41 14.7	41.09	13 26.96	0.409	20 37 16.31
Sat.	32	20 54 49.22	10.231	S. 17 24 39.1	+ 41.87	13 36.36	0.375	20 41 12.86

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.

The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

Diff. for 1 Hour,
+ 9^s.8565.
(Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.				
		λ	λ'						
1	1	279 41 36.6	41 53.0	152.96	+ 0.24	9.992 6760	- 1.0	h m s 5 20 7.82	
2	2	280 42 47.7	43 3.9	152.97	+ 0.11	9.992 6744	- 0.3	5 16 11.90	
3	3	281 43 59.0	44 15.0	152.97	- 0.02	9.992 6745	+ 0.4	5 12 15.99	
4	4	282 45 10.3	45 26.2	152.97	- 0.17	9.992 6762	+ 1.0	5 8 20.08	
5	5	283 46 21.4	46 37.2	152.96	0.30	9.992 6793	1.7	5 4 24.17	
6	6	284 47 32.4	47 48.0	152.95	0.41	9.992 6841	2.4	5 0 28.25	
7	7	285 48 43.1	48 58.5	152.94	- 0.52	9.992 6906	+ 3.1	4 56 32.34	
8	8	286 49 53.4	50 8.5	152.92	0.58	9.992 6990	3.9	4 52 36.43	
9	9	287 51 3.2	51 18.1	152.89	0.63	9.992 7093	4.7	4 48 40.52	
10	10	288 52 12.4	52 27.2	152.87	- 0.63	9.992 7217	+ 5.6	4 44 44.61	
11	11	289 53 21.0	53 35.6	152.85	0.62	9.992 7363	6.6	4 40 48.70	
12	12	290 54 29.0	54 43.5	152.82	0.59	9.992 7533	7.6	4 36 52.78	
13	13	291 55 36.4	55 50.8	152.79	- 0.51	9.992 7728	+ 8.6	4 32 56.87	
14	14	292 56 43.2	56 57.4	152.77	0.40	9.992 7948	9.7	4 29 0.96	
15	15	293 57 49.4	58 3.4	152.75	0.28	9.992 8195	10.8	4 25 5.05	
16	16	294 58 55.0	59 8.8	152.72	- 0.15	9.992 8468	+ 12.0	4 21 9.14	
17	17	296 0 0.0	0 13.6	152.70	- 0.01	9.992 8769	13.1	4 17 13.23	
18	18	297 1 4.3	1 17.8	152.67	+ 0.12	9.992 9096	14.2	4 13 17.32	
19	19	298 2 8.1	2 21.4	152.65	+ 0.24	9.992 9451	+ 15.4	4 9 21.41	
20	20	299 3 11.3	3 24.5	152.62	0.35	9.992 9832	16.5	4 5 25.50	
21	21	300 4 14.0	4 27.0	152.60	0.46	9.993 0241	17.6	4 1 29.58	
22	22	301 5 16.1	5 29.0	152.58	+ 0.53	9.993 0675	+ 18.6	3 57 33.67	
23	23	302 6 17.7	6 30.4	152.56	0.59	9.993 1135	19.7	3 53 37.76	
24	24	303 7 18.8	7 31.3	152.53	0.63	9.993 1619	20.7	3 49 41.85	
25	25	304 8 19.3	8 31.7	152.51	+ 0.62	9.993 2127	+ 21.6	3 45 45.94	
26	26	305 9 19.2	9 31.5	152.49	0.59	9.993 2656	22.5	3 41 50.03	
27	27	306 10 18.6	10 30.7	152.46	0.51	9.993 3207	23.3	3 37 54.12	
28	28	307 11 17.4	11 29.3	152.44	+ 0.41	9.993 3777	+ 24.1	3 33 58.21	
29	29	308 12 15.6	12 27.3	152.41	0.30	9.993 4365	24.8	3 30 2.30	
30	30	309 13 13.0	13 24.6	152.38	0.18	9.993 4969	25.5	3 26 6.39	
31	31	310 14 9.6	14 21.1	152.34	+ 0.03	9.993 5587	26.1	3 22 10.48	
32	32	311 15 5.4	15 16.7	152.30	- 0.10	9.993 6219	+ 26.6	3 18 14.57	

NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.

Diff. for 1 Hour,
— 9^s.8296.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
							h m	m	d
1	16 21.1	16 27.6	59 55.0	+ 2.09	60 18.9	+ 1.86	22 35.1	2.58	27.1
2	16 33.3	16 37.9	60 39.6	1.58	60 56.5	1.23	23 38.2	2.68	28.1
3	16 41.3	16 43.4	61 9.1	0.85	61 16.8	+ 0.44	0	. .	29.1
4	16 44.2	16 43.6	61 19.5	+ 0.02	61 17.3	- 0.40	0 43.0	2.69	0.6
5	16 41.6	16 38.4	61 10.1	- 0.79	60 58.3	1.15	1 46.6	2.59	1.6
6	16 34.1	16 28.8	60 42.5	1.47	60 23.2	1.74	2 47.0	2.43	2.6
7	16 22.8	16 16.2	60 1.1	- 1.93	59 36.8	- 2.09	3 43.2	2.25	3.6
8	16 9.2	16 2.0	59 11.1	2.18	58 44.6	2.22	4 35.3	2.08	4.6
9	15 54.7	15 47.5	58 17.8	2.22	57 51.4	2.18	5 24.3	1.99	5.6
10	15 40.4	15 33.7	57 25.6	- 2.10	57 1.0	- 2.00	6 11.2	1.93	6.6
11	15 27.3	15 21.4	56 37.6	1.88	56 15.8	1.75	6 57.2	1.90	7.6
12	15 15.9	15 10.9	55 55.6	1.61	55 37.1	1.47	7 43.1	1.93	8.6
13	15 6.3	15 2.2	55 20.3	- 1.33	55 5.3	- 1.19	8 29.6	1.96	9.6
14	14 58.6	14 55.3	54 51.9	1.05	54 40.1	0.91	9 17.1	2.00	10.6
15	14 52.6	14 50.2	54 30.0	0.79	54 21.3	0.66	10 5.6	2.04	11.6
16	14 48.2	14 46.6	54 14.0	- 0.55	54 8.1	- 0.44	10 54.8	2.05	12.6
17	14 45.4	14 44.5	54 3.5	0.33	54 0.2	0.23	11 44.0	2.04	13.6
18	14 43.9	14 43.7	53 58.1	- 0.12	53 57.3	- 0.02	12 32.4	2.00	14.6
19	14 43.8	14 44.3	53 57.7	+ 0.08	53 59.4	+ 0.20	13 19.6	1.94	15.6
20	14 45.1	14 46.3	54 2.4	0.31	54 6.9	0.43	14 5.3	1.87	16.6
21	14 47.9	14 50.0	54 12.9	0.56	54 20.4	0.70	14 49.4	1.82	17.6
22	14 52.5	14 55.5	54 29.6	+ 0.84	54 40.6	+ 0.99	15 32.6	1.79	18.6
23	14 59.0	15 3.0	54 53.4	1.15	55 8.1	1.31	16 15.3	1.79	19.6
24	15 7.5	15 12.6	55 24.8	1.47	55 43.4	1.63	16 58.5	1.82	20.6
25	15 18.2	15 24.3	56 4.0	+ 1.79	56 26.3	+ 1.93	17 43.1	1.90	21.6
26	15 30.9	15 37.8	56 50.4	2.07	57 16.0	2.18	18 30.3	2.03	22.6
27	15 45.1	15 52.7	57 42.8	2.27	58 10.5	2.32	19 21.1	2.20	23.6
28	16 0.3	16 7.9	58 38.5	+ 2.34	59 6.5	+ 2.31	20 16.2	2.39	24.6
29	16 15.3	16 22.4	59 33.7	2.22	59 59.4	2.07	21 15.8	2.56	25.6
30	16 28.8	16 34.4	60 23.1	1.86	60 43.9	1.59	22 18.8	2.67	26.6
31	16 39.1	16 42.7	61 1.0	1.26	61 14.0	0.89	23 23.1	2.67	27.6
32	16 44.9	16 45.8	61 22.3	+ 0.49	61 25.6	+ 0.06	0	. .	28.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 1.					FRIDAY 3.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	16 20 10.54	2.4732	S.18 9 26.0	8.696	0	18 26 2.50	2.7331	S.22 33 4.4	1.759
1	16 22 39.15	2.4804	18 18 4.5	8.587	1	18 28 46.56	2.7355	22 34 44.8	1.586
2	16 25 8.19	2.4875	18 26 36.5	8.477	2	18 31 30.76	2.7377	22 36 14.7	1.412
3	16 27 37.65	2.4946	18 35 1.8	8.365	3	18 34 15.09	2.7398	22 37 34.3	1.239
4	16 30 7.54	2.5017	18 43 20.3	8.251	4	18 36 59.54	2.7417	22 38 43.4	1.064
5	16 32 37.86	2.5087	18 51 31.9	8.135	5	18 39 44.09	2.7433	22 39 42.0	0.890
6	16 35 8.59	2.5157	18 59 36.5	8.018	6	18 42 28.74	2.7449	22 40 30.2	0.716
7	16 37 39.75	2.5227	19 7 34.1	7.900	7	18 45 13.48	2.7463	22 41 7.9	0.540
8	16 40 11.32	2.5297	19 15 24.5	7.779	8	18 47 58.30	2.7476	22 41 35.0	0.364
9	16 42 43.31	2.5366	19 23 7.6	7.657	9	18 50 43.19	2.7486	22 41 51.6	0.188
10	16 45 15.71	2.5433	19 30 43.3	7.533	10	18 53 28.13	2.7494	22 41 57.6	-0.012
11	16 47 48.51	2.5501	19 38 11.6	7.407	11	18 56 13.12	2.7501	22 41 53.1	+0.163
12	16 50 21.72	2.5568	19 45 32.2	7.279	12	18 58 58.14	2.7506	22 41 38.0	0.340
13	16 52 55.33	2.5635	19 52 45.1	7.151	13	19 1 43.19	2.7509	22 41 12.3	0.517
14	16 55 29.34	2.5701	19 59 50.3	7.021	14	19 4 28.25	2.7511	22 40 36.0	0.692
15	16 58 3.74	2.5766	20 6 47.6	6.888	15	19 7 13.32	2.7511	22 39 49.2	0.869
16	17 0 38.53	2.5831	20 13 36.9	6.754	16	19 9 58.38	2.7509	22 38 51.7	1.046
17	17 3 13.71	2.5895	20 20 18.1	6.618	17	19 12 43.43	2.7506	22 37 43.7	1.221
18	17 5 49.27	2.5957	20 26 51.1	6.481	18	19 15 28.45	2.7500	22 36 25.2	1.397
19	17 8 25.20	2.6019	20 33 15.8	6.342	19	19 18 13.43	2.7492	22 34 56.1	1.573
20	17 11 1.50	2.6081	20 39 32.2	6.203	20	19 20 58.36	2.7484	22 33 16.4	1.748
21	17 13 38.17	2.6142	20 45 40.2	6.062	21	19 23 43.24	2.7474	22 31 26.3	1.923
22	17 16 15.20	2.6202	20 51 39.6	5.918	22	19 26 28.05	2.7462	22 29 25.6	2.098
23	17 18 52.59	2.6260	S.20 57 30.3	5.773	23	19 29 12.78	2.7447	S.22 27 14.5	2.272
THURSDAY 2.					SATURDAY 4.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	17 21 30.32	2.6317	S.21 3 12.4	5.628	0	19 31 57.42	2.7432	S.22 24 53.0	2.446
1	17 24 8.40	2.6374	21 8 45.7	5.480	1	19 34 41.96	2.7415	22 22 21.0	2.619
2	17 26 46.81	2.6430	21 14 10.0	5.331	2	19 37 26.40	2.7396	22 19 38.7	2.792
3	17 29 25.56	2.6485	21 19 25.4	5.181	3	19 40 10.71	2.7375	22 16 46.0	2.964
4	17 32 4.63	2.6538	21 24 31.7	5.029	4	19 42 54.90	2.7353	22 13 43.0	3.136
5	17 34 44.02	2.6590	21 29 28.9	4.876	5	19 45 38.95	2.7329	22 10 29.7	3.307
6	17 37 23.71	2.6641	21 34 16.8	4.722	6	19 48 22.85	2.7304	22 7 6.2	3.477
7	17 40 3.71	2.6692	21 38 55.5	4.567	7	19 51 6.60	2.7277	22 3 32.5	3.646
8	17 42 44.01	2.6741	21 43 24.8	4.409	8	19 53 50.18	2.7248	21 59 48.7	3.814
9	17 45 24.60	2.6788	21 47 44.6	4.251	9	19 56 33.58	2.7218	21 55 54.8	3.983
10	17 48 5.47	2.6834	21 51 54.9	4.092	10	19 59 16.80	2.7187	21 51 50.8	4.149
11	17 50 46.61	2.6879	21 55 55.6	3.932	11	20 1 59.83	2.7155	21 47 36.9	4.314
12	17 53 28.02	2.6923	21 59 46.7	3.770	12	20 4 42.66	2.7121	21 43 13.1	4.479
13	17 56 9.69	2.6965	22 3 28.0	3.607	13	20 7 25.28	2.7084	21 38 39.4	4.643
14	17 58 51.60	2.7006	22 6 59.6	3.444	14	20 10 7.67	2.7047	21 33 55.9	4.807
15	18 1 33.76	2.7045	22 10 21.3	3.279	15	20 12 49.84	2.7009	21 29 2.6	4.968
16	18 4 16.14	2.7082	22 13 33.1	3.113	16	20 15 31.78	2.6969	21 23 59.7	5.128
17	18 6 58.75	2.7119	22 16 34.9	2.947	17	20 18 13.47	2.6928	21 18 47.2	5.287
18	18 9 41.57	2.7154	22 19 26.7	2.780	18	20 20 54.91	2.6886	21 13 25.2	5.446
19	18 12 24.60	2.7188	22 22 8.5	2.612	19	20 23 36.10	2.6842	21 7 53.7	5.603
20	18 15 7.23	2.7220	22 24 40.1	2.442	20	20 26 17.02	2.6797	21 2 12.8	5.759
21	18 17 51.24	2.7250	22 27 1.5	2.272	21	20 28 57.66	2.6750	20 56 22.6	5.913
22	18 20 34.83	2.7279	22 29 12.7	2.102	22	20 31 38.02	2.6703	20 50 23.2	6.067
23	18 23 18.59	2.7306	22 31 13.7	1.931	23	20 34 18.10	2.6656	20 44 14.6	6.218
24	18 26 2.50	2.7331	S.22 33 4.4	1.759	24	20 36 57.89	2.6606	S.20 37 57.0	6.368

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 5.					TUESDAY 7.				
0	h m s	s	S. ° ' "	"	0	h m s	s	S. ° ' "	"
0	20 36 57.89	2.6606	S. 20 37 57.0	6.368	0	22 37 40.98	2.3582	S. 13 9 51.5	11.630
1	20 39 37.37	2.6555	20 31 30.4	6.517	1	22 40 2.28	2.3517	12 58 11.7	11.697
2	20 42 16.55	2.6503	20 24 54.9	6.665	2	22 42 23.19	2.3453	12 46 27.9	11.762
3	20 44 55.41	2.6451	20 18 10.6	6.812	3	22 44 43.72	2.3391	12 34 40.2	11.825
4	20 47 33.96	2.6397	20 11 17.6	6.956	4	22 47 3.88	2.3327	12 22 48.9	11.886
5	20 50 12.18	2.6343	20 4 15.9	7.098	5	22 49 23.65	2.3263	12 10 53.9	11.946
6	20 52 50.07	2.6288	19 57 5.7	7.240	6	22 51 43.04	2.3202	11 58 55.4	12.003
7	20 55 27.63	2.6232	19 49 47.1	7.380	7	22 54 2.07	2.3140	11 46 53.5	12.060
8	20 58 4.85	2.6174	19 42 20.1	7.519	8	22 56 20.72	2.3077	11 34 48.2	12.115
9	21 0 41.72	2.6117	19 34 44.8	7.656	9	22 58 39.00	2.3017	11 22 39.7	12.167
10	21 3 18.25	2.6058	19 27 1.4	7.791	10	23 0 56.92	2.2956	11 10 28.1	12.219
11	21 5 54.42	2.5998	19 19 9.9	7.924	11	23 3 14.47	2.2896	10 58 13.4	12.269
12	21 8 30.23	2.5938	19 11 10.5	8.056	12	23 5 31.67	2.2837	10 45 55.8	12.317
13	21 11 5.68	2.5877	19 3 3.2	8.187	13	23 7 48.51	2.2777	10 33 35.4	12.363
14	21 13 40.76	2.5816	18 54 48.1	8.315	14	23 10 4.99	2.2718	10 21 12.2	12.408
15	21 15 15.47	2.5754	18 46 25.4	8.442	15	23 12 21.13	2.2661	10 8 46.4	12.452
16	21 18 49.81	2.5692	18 37 55.1	8.567	16	23 14 36.92	2.2602	9 56 18.0	12.494
17	21 21 23.78	2.5629	18 29 17.4	8.690	17	23 16 52.36	2.2546	9 43 47.1	12.534
18	21 23 57.36	2.5565	18 20 32.3	8.812	18	23 19 7.47	2.2489	9 31 13.9	12.572
19	21 26 30.56	2.5502	18 11 40.0	8.932	19	23 21 22.23	2.2433	9 18 38.4	12.610
20	21 29 3.38	2.5437	18 2 40.5	9.050	20	23 23 36.66	2.2378	9 6 0.7	12.647
21	21 31 35.81	2.5372	17 53 34.0	9.166	21	23 25 50.77	2.2323	8 53 20.8	12.681
22	21 34 7.85	2.5307	17 44 20.6	9.281	22	23 28 4.54	2.2268	8 40 39.0	12.713
23	21 36 39.50	2.5242	S. 17 35 0.3	9.394	23	23 30 17.99	2.2216	S. 8 27 55.2	12.745
MONDAY 6.					WEDNESDAY 8.				
0	h m s	s	S. ° ' "	"	0	h m s	s	S. ° ' "	"
0	21 39 10.75	2.5176	S. 17 25 33.3	9.505	0	23 32 31.13	2.2163	S. 8 15 9.6	12.774
1	21 41 41.61	2.5111	17 15 59.7	9.614	1	23 34 43.95	2.2110	8 2 22.3	12.802
2	21 44 12.08	2.5044	17 6 19.6	9.721	2	23 36 56.45	2.2058	7 49 33.3	12.830
3	21 46 42.14	2.4977	16 56 33.2	9.827	3	23 39 8.65	2.2008	7 36 42.7	12.855
4	21 49 11.81	2.4911	16 46 40.4	9.932	4	23 41 20.55	2.1957	7 23 50.7	12.879
5	21 51 41.08	2.4844	16 36 41.4	10.033	5	23 43 32.14	2.1907	7 10 57.2	12.902
6	21 54 9.94	2.4777	16 26 36.4	10.132	6	23 45 43.44	2.1856	6 58 2.4	12.923
7	21 56 38.41	2.4711	16 16 25.5	10.231	7	23 47 54.45	2.1811	6 45 6.4	12.943
8	21 59 6.47	2.4643	16 6 8.7	10.328	8	23 50 5.17	2.1763	6 32 9.2	12.962
9	22 1 34.13	2.4577	15 55 46.1	10.424	9	23 52 15.61	2.1716	6 19 10.9	12.980
10	22 4 1.39	2.4509	15 45 17.8	10.517	10	23 54 25.76	2.1669	6 6 11.6	12.996
11	22 6 28.24	2.4442	15 34 44.1	10.607	11	23 56 35.64	2.1624	5 53 11.4	13.011
12	22 8 54.69	2.4375	15 24 4.9	10.697	12	23 58 45.25	2.1579	5 40 10.3	13.024
13	22 11 20.74	2.4308	15 13 20.4	10.784	13	0 0 54.59	2.1535	5 27 8.5	13.036
14	22 13 46.39	2.4241	15 2 30.8	10.870	14	0 3 3.67	2.1492	5 14 6.0	13.047
15	22 16 11.63	2.4174	14 51 36.0	10.954	15	0 5 12.49	2.1448	5 1 2.8	13.057
16	22 18 36.48	2.4107	14 40 36.3	11.036	16	0 7 21.05	2.1406	4 47 59.1	13.065
17	22 21 0.92	2.4041	14 29 31.7	11.117	17	0 9 29.36	2.1365	4 34 55.0	13.072
18	22 23 24.97	2.3976	14 18 22.3	11.196	18	0 11 37.43	2.1324	4 21 50.4	13.079
19	22 25 48.63	2.3909	14 7 8.2	11.272	19	0 13 45.25	2.1283	4 8 45.5	13.083
20	22 28 11.88	2.3842	13 55 49.6	11.347	20	0 15 52.83	2.1245	3 55 40.4	13.087
21	22 30 34.74	2.3777	13 44 26.5	11.422	21	0 18 0.19	2.1207	3 42 35.0	13.090
22	22 32 57.21	2.3712	13 32 59.0	11.493	22	0 20 7.31	2.1168	3 29 29.6	13.091
23	22 35 19.29	2.3647	13 21 27.3	11.562	23	0 22 14.21	2.1131	3 16 24.1	13.092
24	22 37 40.98	2.3582	S. 13 9 51.5	11.630	24	0 24 20.88	2.1094	S. 3 3 18.6	13.091

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 9.					SATURDAY 11.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	24 20.88	2.1094	S. 3 3 18.6	13.091	0	2 2 43.27	2.0151	N. 7 4 34.1	11.891
1	0 26 27.34	2.1058	2 50 13.2	13.088	1	2 4 44.16	2.0146	7 16 26.2	11.845
2	0 28 33.58	2.1023	2 37 8.0	13.084	2	2 6 45.02	2.0142	7 28 15.5	11.798
3	0 30 39.62	2.0989	2 24 3.1	13.080	3	2 8 45.87	2.0140	7 40 2.0	11.751
4	0 32 45.45	2.0955	2 10 58.4	13.075	4	2 10 46.70	2.0137	7 51 45.6	11.703
5	0 34 51.08	2.0922	1 57 54.1	13.068	5	2 12 47.52	2.0136	8 3 26.4	11.655
6	0 36 56.52	2.0890	1 44 50.2	13.061	6	2 14 48.33	2.0133	8 15 4.2	11.605
7	0 39 1.76	2.0858	1 31 46.8	13.052	7	2 16 49.12	2.0132	8 26 39.0	11.555
8	0 41 6.82	2.0828	1 18 44.0	13.042	8	2 18 49.92	2.0132	8 38 10.8	11.504
9	0 43 11.70	2.0798	1 5 41.8	13.032	9	2 20 50.71	2.0132	8 49 39.5	11.452
10	0 45 16.40	2.0768	0 52 40.2	13.020	10	2 22 51.51	2.0134	9 1 5.1	11.401
11	0 47 20.92	2.0739	0 39 39.4	13.007	11	2 24 52.32	2.0135	9 12 27.6	11.348
12	0 49 25.27	2.0712	0 26 39.4	12.992	12	2 26 53.13	2.0137	9 23 46.9	11.294
13	0 51 29.46	2.0685	0 13 40.3	12.977	13	2 28 53.96	2.0139	9 35 2.9	11.240
14	0 53 33.49	2.0658	S. 0 0 42.1	12.962	14	2 30 54.80	2.0141	9 46 15.7	11.185
15	0 55 37.36	2.0632	N. 0 12 15.1	12.945	15	2 32 55.65	2.0144	9 57 25.1	11.129
16	0 57 41.07	2.0607	0 25 11.3	12.927	16	2 34 56.53	2.0148	10 8 31.2	11.073
17	0 59 44.64	2.0582	0 38 6.4	12.908	17	2 36 57.43	2.0152	10 19 33.9	11.016
18	1 1 48.06	2.0559	0 51 0.3	12.888	18	2 38 58.36	2.0157	10 30 33.1	10.958
19	1 3 51.35	2.0536	1 3 53.0	12.867	19	2 40 59.32	2.0162	10 41 28.9	10.900
20	1 5 54.49	2.0513	1 16 44.4	12.846	20	2 43 0.31	2.0167	10 52 21.1	10.841
21	1 7 57.50	2.0492	1 29 34.5	12.823	21	2 45 1.33	2.0173	11 3 9.8	10.782
22	1 10 0.39	2.0471	1 42 23.2	12.800	22	2 47 2.39	2.0180	11 13 54.9	10.721
23	1 12 3.15	2.0450	N. 1 55 10.5	12.776	23	2 49 3.49	2.0187	N. 11 24 36.3	10.659
FRIDAY 10.					SUNDAY 12.				
0	1 14 5.79	2.0430	N. 2 7 56.3	12.751	0	2 51 4.63	2.0193	N. 11 35 14.0	10.597
1	1 16 8.31	2.0411	2 20 40.6	12.724	1	2 53 5.81	2.0201	11 45 48.0	10.536
2	1 18 10.72	2.0393	2 33 23.2	12.697	2	2 55 7.04	2.0209	11 56 18.3	10.472
3	1 20 13.03	2.0376	2 46 4.2	12.669	3	2 57 8.32	2.0217	12 6 44.7	10.408
4	1 22 15.23	2.0358	2 58 43.5	12.641	4	2 59 9.65	2.0227	12 17 7.3	10.344
5	1 24 17.33	2.0342	3 11 21.1	12.611	5	3 1 11.04	2.0236	12 27 26.0	10.279
6	1 26 19.33	2.0326	3 23 56.8	12.580	6	3 3 12.48	2.0245	12 37 40.8	10.214
7	1 28 21.24	2.0311	3 36 30.7	12.549	7	3 5 13.98	2.0256	12 47 51.7	10.148
8	1 30 23.06	2.0297	3 49 2.7	12.517	8	3 7 15.55	2.0266	12 57 58.6	10.081
9	1 32 24.80	2.0282	4 1 32.7	12.483	9	3 9 17.17	2.0276	13 8 1.4	10.013
10	1 34 26.45	2.0269	4 14 0.7	12.449	10	3 11 18.86	2.0287	13 18 0.2	9.945
11	1 36 28.03	2.0257	4 26 26.6	12.414	11	3 13 20.62	2.0298	13 27 54.8	9.876
12	1 38 29.54	2.0246	4 38 50.4	12.379	12	3 15 22.44	2.0309	13 37 45.3	9.807
13	1 40 30.98	2.0234	4 51 12.1	12.342	13	3 17 24.33	2.0322	13 47 31.6	9.737
14	1 42 32.35	2.0223	5 3 31.5	12.305	14	3 19 26.30	2.0334	13 57 13.7	9.666
15	1 44 33.66	2.0213	5 15 48.7	12.267	15	3 21 28.34	2.0347	14 6 51.5	9.594
16	1 46 34.91	2.0204	5 28 3.6	12.228	16	3 23 30.46	2.0359	14 16 25.0	9.522
17	1 48 36.11	2.0196	5 40 16.1	12.188	17	3 25 32.65	2.0372	14 25 54.2	9.451
18	1 50 37.26	2.0187	5 52 26.2	12.148	18	3 27 34.92	2.0386	14 35 19.1	9.377
19	1 52 38.36	2.0179	6 4 33.9	12.107	19	3 29 37.28	2.0399	14 44 39.5	9.302
20	1 54 39.41	2.0172	6 16 39.1	12.066	20	3 31 39.71	2.0412	14 53 55.4	9.228
21	1 56 40.43	2.0167	6 28 41.8	12.023	21	3 33 42.23	2.0427	15 3 6.9	9.154
22	1 58 41.41	2.0160	6 40 41.9	11.979	22	3 35 44.84	2.0442	15 12 13.9	9.079
23	2 0 42.35	2.0155	6 52 39.3	11.935	23	3 37 47.53	2.0456	15 21 16.4	9.002
24	2 2 43.27	2.0151	N. 7 4 34.1	11.891	24	3 39 50.31	2.0471	N. 15 30 14.2	8.925

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 13.					WEDNESDAY 15.				
0	h m s	s	N. 15 30 14.2	8.925	0	h m s	s	N. 20 59 46.4	4.514
1	3 39 50.31	2.0471	15 39 7.4	8.847	1	5 19 58.60	2.1243	21 4 20.2	4.513
2	3 41 53.18	2.0486	15 47 55.9	8.770	2	5 22 6.10	2.1256	21 8 48.0	4.412
3	3 43 56.14	2.0501	15 56 39.8	8.692	3	5 24 13.67	2.1269	21 13 9.7	4.311
4	3 45 59.19	2.0516	16 5 18.9	8.612	4	5 26 21.33	2.1282	21 17 25.3	4.209
5	3 48 2.33	2.0531	16 13 53.3	8.532	5	5 28 29.06	2.1294	21 21 34.8	4.107
6	3 50 5.56	2.0547	16 22 22.8	8.452	6	5 30 36.86	2.1307	21 25 38.1	4.004
7	3 52 8.89	2.0563	16 30 47.5	8.371	7	5 32 44.74	2.1319	21 29 35.3	3.902
8	3 54 12.32	2.0579	16 39 7.4	8.291	8	5 34 52.69	2.1330	21 33 26.3	3.798
9	3 56 15.84	2.0595	16 47 22.4	8.208	9	5 37 0.70	2.1341	21 37 11.1	3.694
10	3 58 19.46	2.0612	16 55 32.4	8.126	10	5 39 8.78	2.1352	21 40 49.6	3.591
11	4 0 23.18	2.0628	17 3 37.5	8.042	11	5 41 16.93	2.1364	21 44 22.0	3.487
12	4 2 27.00	2.0645	17 11 37.5	7.958	12	5 43 25.15	2.1374	21 47 48.1	3.382
13	4 4 30.92	2.0662	17 19 32.5	7.875	13	5 45 33.42	2.1383	21 51 7.9	3.278
14	4 6 34.94	2.0677	17 27 22.5	7.790	14	5 47 41.75	2.1393	21 54 21.5	3.174
15	4 8 39.05	2.0694	17 35 7.3	7.704	15	5 49 50.14	2.1402	21 57 28.8	3.068
16	4 10 43.27	2.0712	17 42 47.0	7.619	16	5 51 58.58	2.1411	22 0 29.7	2.963
17	4 12 47.59	2.0728	17 50 21.6	7.532	17	5 54 7.07	2.1420	22 3 24.4	2.858
18	4 14 52.01	2.0745	17 57 50.9	7.445	18	5 56 15.62	2.1428	22 6 12.7	2.752
19	4 16 56.53	2.0762	18 5 15.0	7.358	19	5 58 24.21	2.1435	22 8 54.7	2.647
20	4 19 1.15	2.0779	18 12 33.9	7.271	20	6 0 32.84	2.1442	22 11 30.3	2.540
21	4 21 5.88	2.0797	18 19 47.5	7.182	21	6 2 41.52	2.1449	22 13 59.5	2.434
22	4 23 10.71	2.0814	18 26 55.7	7.092	22	6 4 50.23	2.1456	22 16 22.4	2.328
23	4 25 15.65	2.0831	N. 18 33 58.6	7.003	23	6 6 58.99	2.1462	N. 22 18 38.9	2.222
24	4 27 20.68	2.0847				6 9 7.78	2.1467		
TUESDAY 14.					THURSDAY 16.				
0	4 29 25.82	2.0865	N. 18 40 56.1	6.913	0	6 11 16.60	2.1472	N. 22 20 49.0	2.115
1	4 31 31.06	2.0882	18 47 48.2	6.822	1	6 13 25.45	2.1477	22 22 52.7	2.007
2	4 33 36.40	2.0899	18 54 34.8	6.732	2	6 15 34.33	2.1482	22 24 49.9	1.900
3	4 35 41.85	2.0916	19 1 16.0	6.640	3	6 17 43.24	2.1487	22 26 40.7	1.793
4	4 37 47.39	2.0932	19 7 51.6	6.548	4	6 19 52.17	2.1490	22 28 25.1	1.687
5	4 39 53.04	2.0950	19 14 21.7	6.455	5	6 22 1.12	2.1493	22 30 3.1	1.579
6	4 41 58.79	2.0967	19 20 46.2	6.362	6	6 24 10.09	2.1496	22 31 34.6	1.472
7	4 44 4.64	2.0982	19 27 5.2	6.270	7	6 26 19.07	2.1497	22 32 59.7	1.364
8	4 46 10.58	2.0999	19 33 18.6	6.176	8	6 28 28.06	2.1499	22 34 18.3	1.257
9	4 48 16.63	2.1017	19 39 26.3	6.081	9	6 30 37.06	2.1500	22 35 30.5	1.149
10	4 50 22.78	2.1032	19 45 28.3	5.986	10	6 32 46.06	2.1501	22 36 36.2	1.041
11	4 52 29.02	2.1048	19 51 24.6	5.891	11	6 34 55.07	2.1502	22 37 35.4	0.933
12	4 54 35.36	2.1064	19 57 15.2	5.795	12	6 37 4.08	2.1502	22 38 28.2	0.826
13	4 56 41.79	2.1080	20 3 0.0	5.699	13	6 39 13.09	2.1501	22 39 14.5	0.718
14	4 58 48.32	2.1097	20 8 39.1	5.603	14	6 41 22.09	2.1499	22 39 54.4	0.611
15	5 0 54.95	2.1112	20 14 12.4	5.506	15	6 43 31.08	2.1498	22 40 27.8	0.502
16	5 3 1.66	2.1127	20 19 39.8	5.408	16	6 45 40.07	2.1497	22 40 54.7	0.394
17	5 5 8.47	2.1142	20 25 1.4	5.311	17	6 47 49.04	2.1493	22 41 15.1	0.287
18	5 7 15.37	2.1157	20 30 17.1	5.212	18	6 49 57.99	2.1490	22 41 29.1	0.179
19	5 9 22.36	2.1172	20 35 26.9	5.113	19	6 52 6.92	2.1487	22 41 36.6	+ 0.072
20	5 11 29.44	2.1187	20 40 30.7	5.014	20	6 54 15.83	2.1483	22 41 37.7	- 0.036
21	5 13 36.60	2.1201	20 45 28.6	4.916	21	6 56 24.72	2.1479	22 41 32.3	0.144
22	5 15 43.85	2.1215	20 50 20.6	4.816	22	6 58 33.58	2.1474	22 41 20.4	0.252
23	5 17 51.18	2.1229	20 55 6.5	4.715	23	7 0 42.41	2.1469	22 41 2.1	0.358
24	5 19 58.60	2.1243	N. 20 59 46.4	4.614	24	7 2 51.21	2.1463	N. 22 40 37.4	0.466

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 17.					SUNDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	7 2 51.21	2.1463	N.22 40 37.4	0.466	0	8 44 23.42	2.0703	N.20 18 46.0	5.317
1	7 4 59.97	2.1457	22 40 6.2	0.573	1	8 46 27.57	2.0680	20 13 24.2	5.408
2	7 7 8.69	2.1450	22 39 28.6	0.680	2	8 48 31.58	2.0656	20 7 57.0	5.499
3	7 9 17.37	2.1443	22 38 44.6	0.787	3	8 50 35.44	2.0632	20 2 24.3	5.589
4	7 11 26.01	2.1435	22 37 54.1	0.895	4	8 52 39.17	2.0609	19 56 46.3	5.679
5	7 13 34.59	2.1427	22 36 57.2	1.001	5	8 54 42.75	2.0585	19 51 2.8	5.769
6	7 15 43.13	2.1419	22 35 54.0	1.107	6	8 56 46.19	2.0561	19 45 14.0	5.857
7	7 17 51.62	2.1410	22 34 44.3	1.214	7	8 58 49.48	2.0536	19 39 20.0	5.945
8	7 20 0.05	2.1400	22 33 28.3	1.320	8	9 0 52.62	2.0512	19 33 20.6	6.032
9	7 22 8.42	2.1390	22 32 5.9	1.426	9	9 2 55.62	2.0488	19 27 16.1	6.119
10	7 24 16.73	2.1379	22 30 37.2	1.532	10	9 4 58.48	2.0463	19 21 6.3	6.207
11	7 26 24.97	2.1368	22 29 2.1	1.637	11	9 7 1.18	2.0438	19 14 51.3	6.292
12	7 28 33.15	2.1357	22 27 20.7	1.742	12	9 9 3.74	2.0414	19 8 31.2	6.377
13	7 30 41.26	2.1346	22 25 33.0	1.848	13	9 11 6.15	2.0389	19 2 6.0	6.462
14	7 32 49.30	2.1333	22 23 38.9	1.953	14	9 13 8.41	2.0364	18 55 35.7	6.547
15	7 34 57.26	2.1321	22 21 38.6	2.057	15	9 15 10.52	2.0339	18 49 0.4	6.630
16	7 37 5.15	2.1308	22 19 32.0	2.162	16	9 17 12.48	2.0314	18 42 20.1	6.713
17	7 39 12.96	2.1294	22 17 19.2	2.266	17	9 19 14.29	2.0289	18 35 34.8	6.796
18	7 41 20.68	2.1280	22 15 0.1	2.371	18	9 21 15.95	2.0263	18 28 44.6	6.877
19	7 43 28.32	2.1267	22 12 34.7	2.474	19	9 23 17.45	2.0238	18 21 49.5	6.959
20	7 45 35.88	2.1252	22 10 3.2	2.577	20	9 25 18.81	2.0214	18 14 49.5	7.040
21	7 47 43.35	2.1237	22 7 25.5	2.680	21	9 27 20.02	2.0189	18 7 44.7	7.120
22	7 49 50.72	2.1221	22 4 41.6	2.783	22	9 29 21.08	2.0163	18 0 35.1	7.199
23	7 51 58.00	2.1206	N.22 1 51.5	2.886	23	9 31 21.98	2.0138	N.17 53 20.8	7.278
SATURDAY 18.					MONDAY 20.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	7 54 5.19	2.1190	N.21 58 55.3	2.987	0	9 33 22.74	2.0114	N.17 46 1.7	7.357
1	7 56 12.28	2.1172	21 55 53.0	3.089	1	9 35 23.35	2.0088	17 38 38.0	7.434
2	7 58 19.26	2.1155	21 52 44.6	3.191	2	9 37 23.80	2.0063	17 31 9.6	7.512
3	8 0 26.14	2.1137	21 49 30.1	3.292	3	9 39 24.11	2.0039	17 23 36.6	7.588
4	8 2 32.91	2.1120	21 46 9.6	3.392	4	9 41 24.27	2.0014	17 15 59.0	7.664
5	8 4 39.58	2.1102	21 42 43.0	3.492	5	9 43 24.28	1.9989	17 8 16.9	7.739
6	8 6 46.14	2.1084	21 39 10.5	3.592	6	9 45 24.14	1.9965	17 0 30.3	7.814
7	8 8 52.59	2.1065	21 35 32.0	3.692	7	9 47 23.86	1.9941	16 52 39.2	7.888
8	8 10 58.92	2.1046	21 31 47.5	3.792	8	9 49 23.43	1.9916	16 44 43.7	7.962
9	8 13 5.14	2.1027	21 27 57.0	3.890	9	9 51 22.85	1.9892	16 36 43.8	8.034
10	8 15 11.24	2.1007	21 24 0.7	3.988	10	9 53 22.13	1.9867	16 28 39.6	8.107
11	8 17 17.23	2.0987	21 19 58.4	4.087	11	9 55 21.26	1.9843	16 20 31.0	8.178
12	8 19 23.09	2.0967	21 15 50.3	4.183	12	9 57 20.25	1.9820	16 12 18.2	8.248
13	8 21 28.83	2.0946	21 11 36.4	4.281	13	9 59 19.10	1.9796	16 4 1.2	8.319
14	8 23 34.44	2.0925	21 7 16.6	4.377	14	10 1 17.80	1.9772	15 55 39.9	8.389
15	8 25 39.93	2.0904	21 2 51.1	4.473	15	10 3 16.36	1.9749	15 47 14.5	8.458
16	8 27 45.29	2.0883	20 58 19.9	4.568	16	10 5 14.79	1.9726	15 38 44.9	8.527
17	8 29 50.53	2.0862	20 53 42.9	4.664	17	10 7 13.07	1.9702	15 30 11.3	8.594
18	8 31 55.63	2.0839	20 49 0.2	4.759	18	10 9 11.21	1.9679	15 21 33.6	8.662
19	8 34 0.60	2.0817	20 44 11.8	4.853	19	10 11 9.22	1.9657	15 12 51.9	8.727
20	8 36 5.43	2.0794	20 39 17.8	4.947	20	10 13 7.09	1.9634	15 4 6.3	8.793
21	8 38 10.13	2.0772	20 34 18.2	5.040	21	10 15 4.83	1.9612	14 55 16.7	8.858
22	8 40 14.70	2.0750	20 29 13.0	5.132	22	10 17 2.44	1.9590	14 46 23.3	8.923
23	8 42 19.13	2.0727	20 24 2.3	5.225	23	10 18 59.91	1.9567	14 37 25.9	8.987
24	8 44 23.42	2.0703	N.20 18 46.0	5.317	24	10 20 57.25	1.9546	N.14 28 24.8	9.050

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 21.					THURSDAY 23.				
0	10 20 57.25	1.9546	N. 14 28 24.8	9.050	0	11 52 54.74	1.8925	N. 6 13 11.7	11.337
1	10 22 54.46	1.9525	14 19 19.9	9.113	1	11 54 48.28	1.8923	6 1 50.5	11.369
2	10 24 51.55	1.9504	14 10 11.2	9.175	2	11 56 41.81	1.8922	5 50 27.4	11.401
3	10 26 48.51	1.9483	14 0 58.9	9.236	3	11 58 35.34	1.8922	5 39 2.4	11.431
4	10 28 45.35	1.9462	13 51 42.9	9.297	4	12 0 28.87	1.8922	5 27 35.7	11.461
5	10 30 42.06	1.9442	13 42 23.2	9.358	5	12 2 22.40	1.8922	5 16 7.1	11.491
6	10 32 38.66	1.9422	13 32 59.9	9.417	6	12 4 15.93	1.8923	5 4 36.8	11.519
7	10 34 35.13	1.9402	13 23 33.1	9.476	7	12 6 9.47	1.8925	4 53 4.8	11.547
8	10 36 31.48	1.9383	13 14 2.8	9.534	8	12 8 3.03	1.8927	4 41 31.1	11.574
9	10 38 27.73	1.9365	13 4 29.0	9.592	9	12 9 56.59	1.8928	4 29 55.9	11.601
10	10 40 23.86	1.9346	12 54 51.8	9.648	10	12 11 50.17	1.8932	4 18 19.0	11.627
11	10 42 19.88	1.9327	12 45 11.2	9.705	11	12 13 43.77	1.8936	4 6 40.6	11.652
12	10 44 15.78	1.9308	12 35 27.2	9.761	12	12 15 37.40	1.8941	3 55 0.7	11.677
13	10 46 11.58	1.9291	12 25 39.9	9.816	13	12 17 31.06	1.8945	3 43 19.3	11.702
14	10 48 7.27	1.9273	12 15 49.3	9.870	14	12 19 24.74	1.8950	3 31 36.5	11.725
15	10 50 2.86	1.9256	12 5 55.5	9.923	15	12 21 18.46	1.8957	3 19 52.3	11.747
16	10 51 58.34	1.9239	11 55 58.5	9.977	16	12 23 12.22	1.8963	3 8 6.8	11.769
17	10 53 53.73	1.9223	11 45 58.3	10.029	17	12 25 6.02	1.8971	2 56 20.0	11.791
18	10 55 49.02	1.9207	11 35 55.0	10.081	18	12 26 59.87	1.8979	2 44 31.9	11.812
19	10 57 44.21	1.9192	11 25 48.6	10.132	19	12 28 53.77	1.8987	2 32 42.6	11.832
20	10 59 39.32	1.9177	11 15 39.2	10.182	20	12 30 47.72	1.8996	2 20 52.1	11.851
21	11 1 34.33	1.9161	11 5 26.7	10.232	21	12 32 41.72	1.9006	2 9 0.5	11.869
22	11 3 29.25	1.9147	10 55 11.3	10.282	22	12 34 35.79	1.9017	1 57 7.8	11.887
23	11 5 24.09	1.9132	N. 10 44 52.9	10.331	23	12 36 29.92	1.9027	N. 1 45 14.0	11.905
WEDNESDAY 22.					FRIDAY 24.				
0	11 7 18.84	1.9118	N. 10 34 31.6	10.378	0	12 38 24.12	1.9039	N. 1 33 19.2	11.922
1	11 9 13.51	1.9105	10 24 7.5	10.426	1	12 40 18.39	1.9052	1 21 23.4	11.937
2	11 11 8.10	1.9092	10 13 40.5	10.472	2	12 42 12.74	1.9064	1 9 26.7	11.952
3	11 13 2.62	1.9081	10 3 10.8	10.517	3	12 44 7.16	1.9078	0 57 29.1	11.967
4	11 14 57.07	1.9068	9 52 38.4	10.563	4	12 46 1.67	1.9092	0 45 30.7	11.981
5	11 16 51.44	1.9056	9 42 3.2	10.609	5	12 47 56.27	1.9107	0 33 31.4	11.994
6	11 18 45.74	1.9045	9 31 25.3	10.653	6	12 49 50.95	1.9122	0 21 31.4	12.006
7	11 20 39.98	1.9035	9 20 44.8	10.697	7	12 51 45.73	1.9138	N. 0 9 30.7	12.017
8	11 22 34.16	1.9025	9 10 1.7	10.739	8	12 53 40.61	1.9155	S. 0 2 30.7	12.029
9	11 24 28.28	1.9015	8 59 16.1	10.782	9	12 55 35.59	1.9172	0 14 32.8	12.039
10	11 26 22.34	1.9005	8 48 27.9	10.823	10	12 57 30.67	1.9190	0 26 35.4	12.047
11	11 28 16.34	1.8996	8 37 37.3	10.863	11	12 59 25.87	1.9209	0 38 38.5	12.057
12	11 30 10.29	1.8987	8 26 44.3	10.903	12	13 1 21.18	1.9228	0 50 42.2	12.065
13	11 32 4.19	1.8980	8 15 48.9	10.943	13	13 3 16.61	1.9248	1 2 46.3	12.072
14	11 33 58.05	1.8972	8 4 51.1	10.983	14	13 5 12.16	1.9269	1 14 50.9	12.079
15	11 35 51.86	1.8966	7 53 50.9	11.022	15	13 7 7.84	1.9291	1 26 55.8	12.084
16	11 37 45.64	1.8959	7 42 48.5	11.058	16	13 9 3.65	1.9312	1 39 1.0	12.089
17	11 39 39.37	1.8953	7 31 43.9	11.096	17	13 10 59.59	1.9335	1 51 6.5	12.094
18	11 41 33.07	1.8947	7 20 37.0	11.132	18	13 12 55.67	1.9358	2 3 12.3	12.097
19	11 43 26.74	1.8942	7 9 28.0	11.168	19	13 14 51.89	1.9382	2 15 18.2	12.099
20	11 45 20.38	1.8938	6 58 16.8	11.203	20	13 16 48.26	1.9407	2 27 24.2	12.101
21	11 47 14.00	1.8935	6 47 3.6	11.237	21	13 18 44.78	1.9432	2 39 30.3	12.102
22	11 49 7.60	1.8932	6 35 48.3	11.272	22	13 20 41.45	1.9458	2 51 36.5	12.103
23	11 51 1.18	1.8928	6 24 31.0	11.305	23	13 22 38.28	1.9484	3 3 42.7	12.102
24	11 52 54.74	1.8925	N. 6 13 11.7	11.337	24	13 24 35.28	1.9513	S. 3 15 48.8	12.101

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 25.					MONDAY 27.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	13 24 35.28	1.9513	S. 3 15 48.8	12.101	1	15 2 43.79	2.1640	S. 12 37 56.9	10.931
2	13 26 32.44	1.9541	3 27 54.8	12.099	2	15 4 53.81	2.1700	12 48 51.2	10.879
3	13 28 29.77	1.9570	3 40 0.7	12.097	3	15 7 4.19	2.1760	12 59 42.4	10.826
4	13 30 27.28	1.9600	3 52 6.4	12.092	4	15 9 14.93	2.1822	13 10 30.3	10.772
5	13 32 24.97	1.9630	4 4 11.8	12.087	5	15 11 26.05	2.1884	13 21 15.0	10.717
6	13 34 22.84	1.9660	4 16 16.8	12.082	6	15 13 37.54	2.1946	13 31 56.4	10.661
7	13 36 20.89	1.9692	4 28 21.6	12.077	7	15 15 49.40	2.2008	13 42 34.3	10.602
8	13 38 19.14	1.9725	4 40 26.0	12.069	8	15 18 1.64	2.2072	13 53 8.7	10.543
9	13 40 17.59	1.9757	4 52 29.9	12.061	9	15 20 14.27	2.2137	14 3 39.5	10.482
10	13 42 16.23	1.9791	5 4 33.3	12.052	10	15 22 27.28	2.2201	14 14 6.6	10.421
11	13 44 15.08	1.9826	5 16 36.1	12.042	11	15 24 40.68	2.2266	14 24 30.0	10.357
12	13 46 14.14	1.9861	5 28 38.3	12.031	12	15 26 54.47	2.2331	14 34 49.5	10.292
13	13 48 13.41	1.9897	5 40 39.8	12.019	13	15 29 8.65	2.2397	14 45 5.1	10.227
14	13 50 12.90	1.9933	5 52 40.6	12.007	14	15 31 23.23	2.2463	14 55 16.7	10.159
15	13 52 12.61	1.9970	6 4 40.7	11.995	15	15 33 38.21	2.2530	15 5 24.2	10.090
16	13 54 12.54	2.0007	6 16 40.0	11.981	16	15 35 53.59	2.2597	15 15 27.5	10.020
17	13 56 12.70	2.0047	6 28 38.4	11.964	17	15 38 9.37	2.2663	15 25 26.6	9.948
18	13 58 13.10	2.0086	6 40 35.7	11.947	18	15 40 25.55	2.2732	15 35 21.3	9.875
19	14 0 13.73	2.0126	6 52 32.1	11.930	19	15 42 42.15	2.2801	15 45 11.6	9.801
20	14 2 14.61	2.0167	7 4 27.4	11.912	20	15 44 59.16	2.2868	15 54 57.3	9.724
21	14 4 15.74	2.0208	7 16 21.6	11.894	21	15 47 16.57	2.2937	16 4 38.5	9.647
22	14 6 17.11	2.0250	7 28 14.7	11.874	22	15 49 34.40	2.3007	16 14 15.0	9.567
23	14 8 18.74	2.0294	7 40 6.5	11.852	23	15 51 52.65	2.3076	16 23 46.6	9.487
24	14 10 20.64	2.0337	S. 7 51 57.0	11.831		15 54 11.31	2.3145	S. 16 33 13.4	9.405
SUNDAY 26.					TUESDAY 28.				
0	14 12 22.79	2.0381	S. 8 3 46.2	11.808	0	15 56 30.39	2.3215	S. 16 42 35.2	9.322
1	14 14 25.21	2.0426	8 15 34.0	11.784	1	15 58 49.89	2.3286	16 51 52.0	9.237
2	14 16 27.90	2.0471	8 27 20.3	11.759	2	16 1 9.82	2.3356	17 1 3.6	9.150
3	14 18 30.86	2.0517	8 39 5.1	11.733	3	16 3 30.16	2.3426	17 10 10.0	9.062
4	14 20 34.11	2.0565	8 50 48.3	11.707	4	16 5 50.93	2.3497	17 19 11.1	8.972
5	14 22 37.64	2.0612	9 2 29.9	11.678	5	16 8 12.13	2.3568	17 28 6.7	8.881
6	14 24 41.45	2.0660	9 14 9.7	11.648	6	16 10 33.75	2.3639	17 36 56.8	8.788
7	14 26 45.56	2.0710	9 25 47.7	11.618	7	16 12 55.80	2.3710	17 45 41.3	8.694
8	14 28 49.97	2.0759	9 37 23.9	11.587	8	16 15 18.27	2.3782	17 54 20.1	8.599
9	14 30 54.67	2.0808	9 48 58.2	11.555	9	16 17 41.18	2.3853	18 2 53.2	8.502
10	14 32 59.67	2.0860	10 0 30.5	11.522	10	16 20 4.51	2.3923	18 11 20.3	8.402
11	14 35 4.99	2.0912	10 12 0.8	11.487	11	16 22 28.26	2.3995	18 19 41.5	8.302
12	14 37 10.61	2.0963	10 23 29.0	11.452	12	16 24 52.45	2.4067	18 27 56.6	8.200
13	14 39 16.55	2.1017	10 34 55.0	11.414	13	16 27 17.06	2.4138	18 36 5.5	8.097
14	14 41 22.81	2.1070	10 46 18.7	11.376	14	16 29 42.11	2.4209	18 44 8.2	7.992
15	14 43 29.39	2.1124	10 57 40.1	11.337	15	16 32 7.58	2.4280	18 52 4.5	7.885
16	14 45 36.30	2.1179	11 8 59.1	11.297	16	16 34 33.47	2.4351	18 59 54.4	7.777
17	14 47 43.54	2.1235	11 20 15.7	11.256	17	16 36 59.79	2.4422	19 7 37.7	7.667
18	14 49 51.12	2.1291	11 31 29.8	11.212	18	16 39 26.54	2.4493	19 15 14.4	7.556
19	14 51 59.03	2.1347	11 42 41.2	11.168	19	16 41 53.71	2.4563	19 22 44.4	7.442
20	14 54 7.28	2.1404	11 53 50.0	11.123	20	16 44 21.30	2.4633	19 30 7.5	7.327
21	14 56 15.88	2.1463	12 4 56.0	11.077	21	16 46 49.31	2.4703	19 37 23.7	7.212
22	14 58 24.83	2.1521	12 15 59.2	11.029	22	16 49 17.74	2.4773	19 44 32.9	7.094
23	15 0 34.13	2.1580	12 26 59.5	10.981	23	16 51 46.59	2.4842	19 51 35.0	6.975
24	15 2 43.79	2.1640	S. 12 37 56.9	10.931	24	16 54 15.85	2.4912	S. 19 58 29.9	6.854

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 29.					FRIDAY 31.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	16 54 15.85	2.4912	S. 19 58 29.9	6.854	0	19 0 24.41	2.7228	S. 22 42 7.9	0.463
1	16 56 45.53	2.4981	20 5 17.5	6.732	1	19 3 7.83	2.7245	22 41 34.9	0.637
2	16 59 15.62	2.5048	20 11 57.7	6.608	2	19 5 51.35	2.7261	22 40 51.5	0.811
3	17 1 46.11	2.5116	20 18 30.5	6.483	3	19 8 34.96	2.7274	22 39 57.6	0.985
4	17 4 17.01	2.5184	20 24 55.7	6.356	4	19 11 18.64	2.7285	22 38 53.3	1.158
5	17 6 48.32	2.5251	20 31 13.2	6.227	5	19 14 2.38	2.7295	22 37 38.6	1.332
6	17 9 20.02	2.5317	20 37 22.9	6.097	6	19 16 46.18	2.7303	22 36 13.4	1.507
7	17 11 52.12	2.5383	20 43 24.9	5.967	7	19 19 30.02	2.7310	22 34 37.8	1.681
8	17 14 24.62	2.5448	20 49 18.9	5.833	8	19 22 13.90	2.7316	22 32 51.7	1.856
9	17 16 57.50	2.5512	20 55 4.9	5.699	9	19 24 57.81	2.7320	22 30 55.1	2.030
10	17 19 30.77	2.5576	21 0 42.8	5.563	10	19 27 41.74	2.7322	22 28 48.1	2.203
11	17 22 4.41	2.5639	21 6 12.5	5.426	11	19 30 25.67	2.7322	22 26 30.7	2.377
12	17 24 38.44	2.5702	21 11 33.9	5.287	12	19 33 9.60	2.7320	22 24 2.8	2.552
13	17 27 12.84	2.5764	21 16 47.0	5.147	13	19 35 53.51	2.7317	22 21 24.5	2.726
14	17 29 47.61	2.5825	21 21 51.6	5.006	14	19 38 37.40	2.7312	22 18 35.7	2.899
15	17 32 22.74	2.5885	21 26 47.7	4.862	15	19 41 21.26	2.7307	22 15 36.6	3.072
16	17 34 58.23	2.5945	21 31 35.1	4.718	16	19 44 5.08	2.7299	22 12 27.1	3.244
17	17 37 34.08	2.6003	21 36 13.9	4.573	17	19 46 48.85	2.7289	22 9 7.3	3.416
18	17 40 10.27	2.6060	21 40 43.9	4.426	18	19 49 32.55	2.7277	22 5 37.2	3.587
19	17 42 46.80	2.6117	21 45 5.0	4.277	19	19 52 16.18	2.7265	22 1 56.8	3.759
20	17 45 23.67	2.6173	21 49 17.2	4.128	20	19 54 59.73	2.7251	21 58 6.1	3.930
21	17 48 0.88	2.6228	21 53 20.4	3.977	21	19 57 43.19	2.7236	21 54 5.2	4.099
22	17 50 38.41	2.6281	21 57 14.5	3.826	22	20 0 26.56	2.7219	21 49 54.2	4.269
23	17 53 16.25	2.6333	S. 22 0 59.5	3.672	23	20 3 9.82	2.7200	S. 21 45 32.9	4.438
THURSDAY 30.					SATURDAY, FEBRUARY 1.				
0	17 55 54.41	2.6386	S. 22 4 35.2	3.517	0	20 5 52.96	2.7179	S. 21 41 1.6	4.606
1	17 58 32.88	2.6436	22 8 1.6	3.362	PHASES OF THE MOON.				
2	18 1 11.64	2.6485	22 11 18.7	3.206					
3	18 3 50.70	2.6533	22 14 26.3	3.047					
4	18 6 30.04	2.6580	22 17 24.4	2.889					
5	18 9 9.66	2.6626	22 20 13.0	2.729					
6	18 11 49.55	2.6670	22 22 51.9	2.568					
7	18 14 29.70	2.6713	22 25 21.2	2.407					
8	18 17 10.11	2.6755	22 27 40.7	2.243					
9	18 19 50.76	2.6795	22 29 50.4	2.079					
10	18 22 31.65	2.6834	22 31 50.2	1.914					
11	18 25 12.77	2.6872	22 33 40.1	1.749	PHASES OF THE MOON.				
12	18 27 54.12	2.6909	22 35 20.1	1.583					
13	18 30 35.68	2.6944	22 36 50.1	1.416					
14	18 33 17.45	2.6977	22 38 10.0	1.247					
15	18 35 59.41	2.7008	22 39 19.8	1.079					
16	18 38 41.55	2.7039	22 40 19.5	0.910					
17	18 41 23.88	2.7069	22 41 9.0	0.740					
18	18 44 6.38	2.7097	22 41 48.3	0.569					
19	18 46 49.04	2.7122	22 42 17.3	0.398					
20	18 49 31.84	2.7146	22 42 36.1	0.227						PHASES OF THE MOON.
21	18 52 14.79	2.7170	22 42 44.6	-0.055					
22	18 54 57.88	2.7192	22 42 42.7	+0.117					
23	18 57 41.09	2.7211	22 42 30.5	0.290					
24	19 0 24.41	2.7228	S. 22 42 7.9	0.463					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
5	SUN W.	22 38 32	2302	24 24 29	2309	26 10 16	2317	27 55 51	2326
	α Arietis E.	90 23 34	2147	88 33 47	2155	86 44 12	2164	84 54 49	2173
	Aldebaran E.	121 46 4	2005	119 52 38	2012	117 59 22	2020	116 6 17	2028
6	SUN W.	36 40 8	2382	38 24 9	2394	40 7 52	2408	41 51 16	2422
	α Arietis E.	75 51 53	2233	74 4 15	2249	72 17 0	2265	70 30 8	2282
	Aldebaran E.	106 44 29	2079	104 52 57	2091	103 1 43	2103	101 10 48	2116
7	SUN W.	50 23 5	2498	52 4 21	2515	53 45 13	2532	55 25 42	2549
	α Arietis E.	61 42 25	2380	59 58 21	2403	58 14 50	2427	56 31 52	2451
	Aldebaran E.	92 1 24	2187	90 12 37	2203	88 24 14	2218	86 36 13	2234
8	SUN W.	63 42 7	2638	65 20 10	2656	66 57 49	2675	68 35 3	2693
	α Arietis E.	48 6 25	2596	46 27 24	2630	44 49 9	2666	43 11 43	2704
	Aldebaran E.	77 42 12	2317	75 56 37	2334	74 11 28	2351	72 26 43	2368
9	SUN W.	76 35 5	2785	78 9 52	2803	79 44 15	2821	81 18 15	2839
	Aldebaran E.	63 49 7	2454	62 6 49	2472	60 24 56	2489	58 43 27	2505
	Pollux E.	108 0 48	2475	106 19 0	2492	104 37 36	2508	102 56 34	2525
10	SUN W.	89 2 28	2928	90 34 11	2945	92 5 33	2962	93 36 33	2978
	SATURN W.	25 30 10	2632	27 8 21	2646	28 46 14	2659	30 23 49	2672
	MARS W.	19 1 28	2954	20 32 38	2953	22 3 50	2954	23 35 0	2958
	Aldebaran E.	50 21 50	2588	48 42 39	2604	47 3 50	2620	45 25 22	2636
	Pollux E.	94 37 4	2605	92 58 16	2621	91 19 50	2636	89 41 44	2652
	JUPITER E.	113 8 27	2546	111 28 18	2561	109 48 30	2577	108 9 4	2592
11	SUN W.	101 6 32	3057	102 35 34	3072	104 4 17	3087	105 32 42	3101
	α Pegasi W.	45 23 4	3561	46 42 21	3531	48 2 11	3504	49 22 31	3480
	SATURN W.	38 27 12	2740	40 2 59	2753	41 38 28	2766	43 13 41	2779
	MARS W.	31 8 51	3000	32 39 4	3010	34 9 4	3020	35 38 51	3031
	Aldebaran E.	37 18 16	2711	35 41 51	2726	34 5 46	2741	32 30 0	2755
	Pollux E.	81 36 20	2725	80 0 14	2739	78 24 26	2753	76 48 56	2766
	JUPITER E.	99 56 53	2664	98 19 25	2677	96 42 15	2690	95 5 22	2703
	Regulus E.	117 26 32	2710	115 50 5	2723	114 13 56	2737	112 38 5	2750
12	SUN W.	112 50 35	3168	114 17 22	3181	115 43 54	3193	117 10 12	3205
	α Pegasi W.	56 9 39	3404	57 31 51	3395	58 54 14	3387	60 16 45	3380
	SATURN W.	51 5 42	2838	52 39 20	2850	54 12 43	2861	55 45 52	2871
	MARS W.	43 4 26	3085	44 32 54	3096	46 1 8	3106	47 29 10	3116
	Pollux E.	68 55 46	2830	67 21 57	2842	65 48 24	2854	64 15 6	2865
	JUPITER E.	87 5 10	2764	85 29 55	2775	83 54 55	2786	82 20 9	2797
	Regulus E.	104 42 57	2811	103 8 43	2822	101 34 44	2833	100 0 59	2843
13	α Pegasi W.	67 10 48	3364	68 33 46	3363	69 56 45	3362	71 19 45	3362
	SATURN W.	63 28 22	2920	65 0 15	2929	66 31 56	2938	68 3 27	2946
	MARS W.	54 46 22	3164	56 13 14	3173	57 39 56	3181	59 6 27	3189
	Pollux E.	56 32 13	2920	55 0 20	2931	53 28 40	2941	51 57 13	2951
	JUPITER E.	74 29 39	2845	72 56 10	2854	71 22 53	2863	69 49 47	2872
	Regulus E.	92 15 31	2892	90 43 3	2901	89 10 46	2910	87 38 41	2919
14	α Pegasi W.	78 14 31	3370	79 37 22	3373	81 0 9	3376	82 22 53	3379

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
5	SUN	W.	29 41 12	2336	31 26 19	2346	33 11 12	2357	34 55 49	2369
	α Arietis	E.	83 5 40	2183	81 16 47	2194	79 28 10	2206	77 39 52	2219
	Aldebaran	E.	114 13 26	2037	112 20 49	2046	110 28 26	2056	108 36 19	2067
6	SUN	W.	43 34 20	2436	45 17 3	2451	46 59 26	2466	48 41 27	2482
	α Arietis	E.	68 43 41	2299	66 57 40	2317	65 12 6	2337	63 27 1	2358
	Aldebaran	E.	99 20 13	2129	97 29 58	2143	95 40 5	2158	93 50 34	2172
7	SUN	W.	57 5 48	2566	58 45 29	2584	60 24 46	2602	62 3 39	2620
	α Arietis	E.	54 49 30	2477	53 7 44	2504	51 26 37	2533	49 46 10	2564
	Aldebaran	E.	84 48 36	2250	83 1 23	2267	81 14 35	2283	79 28 11	2300
8	SUN	W.	70 11 53	2711	71 48 18	2730	73 24 18	2748	74 59 54	2767
	α Arietis	E.	41 35 9	2746	39 59 30	2790	38 24 48	2838	36 51 8	2891
	Aldebaran	E.	70 42 22	2386	68 58 27	2403	67 14 56	2420	65 31 49	2437
9	SUN	W.	82 51 52	2858	84 25 5	2876	85 57 55	2893	87 30 23	2911
	Aldebaran	E.	57 2 21	2522	55 21 39	2539	53 41 20	2556	52 1 24	2572
	Pollux	E.	101 15 55	2541	99 35 39	2557	97 55 46	2573	96 16 14	2589
10	SUN	W.	95 7 13	2995	96 37 32	3011	98 7 31	3026	99 37 11	3042
	SATURN	W.	32 1 6	2687	33 38 4	2700	35 14 45	2713	36 51 7	2726
	MARS	W.	25 6 5	2964	26 37 2	2972	28 7 50	2981	29 38 26	2990
	Aldebaran	E.	43 47 15	2652	42 9 30	2667	40 32 5	2682	38 55 1	2696
	Pollux	E.	88 3 59	2667	86 26 34	2682	84 49 30	2696	83 12 45	2711
	JUPITER	E.	106 29 58	2607	104 51 13	2621	103 12 47	2635	101 34 40	2650
11	SUN	W.	107 0 50	3115	108 28 41	3129	109 56 15	3143	111 23 33	3156
	α Pegasi	W.	50 43 17	3460	52 4 26	3443	53 25 54	3428	54 47 39	3415
	SATURN	W.	44 48 37	2791	46 23 16	2803	47 57 40	2815	49 31 49	2827
	MARS	W.	37 8 25	3042	38 37 45	3054	40 6 51	3064	41 35 45	3074
	Aldebaran	E.	30 54 33	2769	29 19 25	2783	27 44 35	2797	26 10 3	2811
	Pollux	E.	75 13 44	2779	73 38 49	2792	72 4 12	2805	70 29 51	2818
	JUPITER	E.	93 28 47	2716	91 52 29	2729	90 16 27	2741	88 40 41	2752
	Regulus	E.	111 2 31	2762	109 27 13	2775	107 52 12	2787	106 17 27	2798
12	SUN	W.	118 36 15	3216	120 2 5	3227	121 27 42	3238	122 53 6	3248
	α Pegasi	W.	61 39 24	3375	63 2 9	3372	64 24 58	3368	65 47 51	3365
	SATURN	W.	57 18 48	2881	58 51 30	2891	60 24 0	2901	61 56 17	2911
	MARS	W.	48 57 1	3126	50 24 39	3136	51 52 4	3145	53 19 18	3154
	Pollux	E.	62 42 3	2876	61 9 14	2888	59 36 40	2899	58 4 20	2909
	JUPITER	E.	80 45 37	2807	79 11 18	2817	77 37 13	2827	76 3 20	2836
	Regulus	E.	98 27 27	2854	96 54 9	2864	95 21 4	2873	93 48 11	2883
13	α Pegasi	W.	72 42 45	3363	74 5 44	3364	75 28 41	3365	76 51 37	3367
	SATURN	W.	69 34 47	2954	71 5 56	2962	72 36 56	2969	74 7 47	2977
	MARS	W.	60 32 49	3198	61 59 1	3206	63 25 3	3213	64 50 56	3220
	Pollux	E.	50 25 58	2961	48 54 56	2970	47 24 6	2980	45 53 28	2990
	JUPITER	E.	68 16 52	2880	66 44 7	2887	65 11 32	2894	63 39 6	2902
	Regulus	E.	86 6 46	2927	84 35 2	2935	83 3 27	2942	81 32 2	2950
14	α Pegasi	W.	83 45 33	3383	85 8 9	3387	86 30 40	3391	87 53 7	3396

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
14	SATURN	W.	75 38 28	2985	77 9 0	2992	78 39 23	2998	80 9 38	3004
	MARS	W.	66 16 41	3228	67 42 17	3235	69 7 45	3241	70 33 5	3247
	α Arietis	W.	34 37 58	3427	35 59 44	3400	37 22 1	3377	38 44 44	3356
	Pollux	E.	44 23 3	2999	42 52 49	3009	41 22 48	3019	39 52 59	3029
	JUPITER	E.	62 6 50	2909	60 34 43	2916	59 2 44	2922	57 30 54	2928
	Regulus	E.	80 0 47	2957	78 29 41	2964	76 58 43	2971	75 27 54	2977
15	α Pegasi	W.	89 15 28	3401	90 37 43	3406	91 59 53	3411	93 21 57	3417
	SATURN	W.	87 39 1	3033	89 8 33	3038	90 37 59	3043	92 7 19	3047
	MARS	W.	77 37 57	3277	79 2 35	3282	80 27 8	3287	81 51 35	3291
	α Arietis	W.	45 43 13	3289	47 7 37	3280	48 32 12	3272	49 56 56	3265
	Aldebaran	W.	12 34 44	3068	14 3 33	3061	15 32 30	3056	17 1 34	3053
	JUPITER	E.	49 53 33	2957	48 22 26	2962	46 51 25	2966	45 20 30	2970
	Regulus	E.	67 55 42	3005	66 25 36	3011	64 55 37	3016	63 25 44	3021
	Spica	E.	121 45 32	3046	120 16 16	3049	118 47 4	3052	117 17 56	3056
16	α Pegasi	W.	100 10 31	3451	101 31 50	3459	102 53 0	3467	104 14 1	3476
	SATURN	W.	99 32 38	3068	101 1 27	3071	102 30 12	3074	103 58 53	3078
	MARS	W.	88 52 32	3313	90 16 29	3316	91 40 22	3319	93 4 11	3322
	α Arietis	W.	57 2 22	3241	58 27 43	3238	59 53 7	3235	61 18 35	3232
	Aldebaran	W.	24 27 24	3052	25 56 32	3053	27 25 39	3055	28 54 44	3056
	JUPITER	E.	37 47 15	2991	36 16 51	2995	34 46 32	2998	33 16 17	3001
	Regulus	E.	55 57 44	3042	54 28 23	3046	52 59 7	3049	51 29 55	3052
	Spica	E.	109 53 18	3071	108 24 33	3074	106 55 51	3076	105 27 13	3078
17	SATURN	W.	111 21 24	3091	112 49 45	3093	114 18 3	3095	115 46 18	3097
	MARS	W.	100 2 24	3337	101 25 53	3339	102 49 19	3341	104 12 43	3343
	α Arietis	W.	68 26 33	3224	69 52 14	3223	71 17 56	3221	72 43 40	3220
	Aldebaran	W.	36 19 42	3064	37 48 36	3065	39 17 28	3067	40 46 18	3068
	JUPITER	E.	25 45 59	3017	24 16 7	3019	22 46 18	3022	21 16 33	3026
	Regulus	E.	44 4 56	3068	42 36 8	3071	41 7 23	3074	39 38 41	3077
	Spica	E.	98 4 42	3089	96 36 20	3091	95 8 0	3093	93 39 42	3094
18	MARS	W.	11 9 9	3351	112 32 21	3353	113 55 31	3354	115 18 40	3356
	α Arietis	W.	79 52 33	3217	81 18 22	3217	82 44 11	3216	84 10 1	3216
	Aldebaran	W.	48 10 12	3073	49 38 55	3073	51 7 38	3073	52 36 21	3073
	Regulus	E.	32 16 5	3091	30 47 44	3094	29 19 27	3097	27 51 14	3101
	Spica	E.	86 18 37	3101	84 50 28	3102	83 22 21	3103	81 54 15	3103
19	α Arietis	W.	91 19 13	3215	92 45 4	3215	94 10 55	3215	95 36 46	3215
	Aldebaran	W.	59 59 53	3073	61 28 36	3072	62 57 19	3071	64 26 4	3070
	Spica	E.	74 33 54	3105	73 5 51	3106	71 37 50	3105	70 9 48	3105
	Antares	E.	120 26 53	3119	118 59 7	3117	117 31 18	3115	116 3 27	3113
20	α Arietis	W.	102 46 2	3215	104 11 53	3215	105 37 44	3215	107 3 35	3216
	Aldebaran	W.	71 50 9	3063	73 19 3	3061	74 48 0	3059	76 17 0	3056
	Pollux	W.	28 5 24	3163	29 32 18	3151	30 59 26	3141	32 26 46	3132
	Spica	E.	62 49 34	3104	61 21 27	3104	59 53 22	3103	58 25 16	3102
	Antares	E.	108 43 32	3102	107 15 25	3099	105 47 15	3096	104 19 1	3094
21	Aldebaran	W.	83 42 47	3042	85 12 8	3038	86 41 33	3034	88 11 3	3030
	Pollux	W.	39 45 56	3094	41 14 13	3087	42 42 38	3080	44 11 11	3073

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
14	SATURN W.	81 39 46	3011	83 9 45	3017	84 39 37	3022	86 9 22	3027
	MARS W.	71 58 18	3254	73 23 23	3260	74 48 21	3266	76 13 12	3271
	α Arietis W.	40 7 51	3339	41 31 18	3325	42 55 1	3311	44 19 0	3299
	Pollux E.	38 23 22	3039	36 53 58	3050	35 24 47	3061	33 55 49	3072
	JUPITER E.	55 59 11	2934	54 27 36	2940	52 56 8	2946	51 24 47	2951
	Regulus E.	73 57 13	2983	72 26 39	2989	70 56 13	2995	69 25 54	3000
15	α Pegasi W.	94 43 54	3423	96 5 45	3430	97 27 28	3437	98 49 3	3444
	SATURN W.	93 36 33	3052	95 5 42	3056	96 34 45	3060	98 3 44	3064
	MARS W.	83 15 57	3296	84 40 13	3300	86 4 24	3305	87 28 30	3309
	α Arietis W.	51 21 49	3359	52 46 48	3253	54 11 54	3248	55 37 6	3244
	Aldebaran W.	18 30 43	3051	19 59 53	3050	21 29 4	3051	22 58 14	3051
	JUPITER E.	43 49 40	2975	42 18 56	2979	40 48 17	2983	39 17 43	2987
	Regulus E.	61 55 57	3026	60 26 16	3030	58 56 40	3034	57 27 10	3038
	Spica E.	115 48 53	3059	114 19 54	3062	112 50 58	3065	111 22 6	3068
16	α Pegasi W.	105 34 53	3485	106 55 34	3495	108 16 4	3505	109 36 23	3515
	SATURN W.	105 27 30	3081	106 56 3	3083	108 24 33	3086	109 53 0	3088
	MARS W.	94 27 57	3325	95 51 39	3329	97 15 17	3332	98 38 52	3334
	α Arietis W.	62 44 6	3230	64 9 39	3228	65 35 15	3226	67 0 53	3225
	Aldebaran W.	30 23 48	3058	31 52 49	3059	33 21 49	3061	34 50 46	3062
	JUPITER E.	31 46 6	3004	30 15 59	3007	28 45 55	3010	27 15 55	3014
	Regulus E.	50 0 47	3056	48 31 44	3059	47 2 44	3062	45 33 48	3065
	Spica E.	103 58 37	3081	102 30 4	3083	101 1 34	3085	99 33 7	3087
17	SATURN W.	117 14 31	3100	118 42 41	3101	120 10 50	3102	121 38 57	3103
	MARS W.	105 36 4	3345	106 59 23	3347	108 22 40	3349	109 45 55	3350
	α Arietis W.	74 9 25	3220	75 35 11	3220	77 0 57	3219	78 26 45	3218
	Aldebaran W.	42 15 7	3069	43 43 55	3070	45 12 41	3070	46 41 27	3071
	JUPITER E.	19 46 53	3030	18 17 17	3034	16 47 46	3038	15 18 20	3043
	Regulus E.	38 10 3	3079	36 41 28	3082	35 12 57	3085	33 44 29	3088
	Spica E.	92 11 25	3096	90 43 11	3097	89 14 58	3099	87 46 47	3100
18	MARS W.	116 41 47	3357	118 4 53	3357	119 27 59	3358	120 51 4	3358
	α Arietis W.	85 35 51	3216	87 1 41	3216	88 27 31	3215	89 53 22	3215
	Aldebaran W.	54 5 4	3073	55 33 46	3073	57 2 28	3073	58 31 10	3073
	Regulus E.	26 23 5	3105	24 55 1	3110	23 27 3	3115	21 59 12	3120
	Spica E.	80 26 9	3104	78 58 4	3105	77 30 1	3105	76 1 57	3105
19	α Arietis W.	97 2 37	3215	98 28 28	3215	99 54 19	3215	101 20 10	3215
	Aldebaran W.	65 54 50	3069	67 23 37	3068	68 52 26	3066	70 1 17	3065
	Spica E.	68 41 45	3106	67 13 43	3105	65 45 40	3106	64 17 36	3105
	Antares E.	114 35 33	3111	113 7 37	3109	111 39 38	3107	110 11 36	3105
20	α Arietis W.	108 29 25	3216	109 55 15	3216	111 21 5	3217	112 46 54	3218
	Aldebaran W.	77 46 3	3054	79 15 9	3051	80 44 18	3048	82 13 31	3045
	Pollux W.	33 54 16	3124	35 21 57	3116	36 49 47	3108	38 17 47	3101
	Spica E.	56 57 9	3101	55 29 1	3100	54 0 51	3099	52 32 41	3098
	Antares E.	102 50 44	3091	101 22 23	3087	99 53 58	3084	98 25 29	3081
21	Aldebaran W.	89 40 39	3026	91 10 20	3021	92 40 6	3016	94 9 59	3011
	Pollux W.	45 39 53	3067	47 8 43	3061	48 37 42	3053	50 6 49	3046

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
21	JUPITER W.	22 16 53	3001	23 47 4	2997	25 17 21	2992	26 47 44	2986
	Spica E.	51 4 29	3097	49 36 16	3096	48 8 2	3096	46 39 47	3095
	Antares E.	96 56 56	3077	95 28 18	3073	93 59 36	3069	92 30 49	3065
22	Aldebaran W.	95 39 58	3005	97 10 4	2999	98 40 17	2993	100 10 38	2987
	Pollux W.	51 36 5	3039	53 5 30	3032	54 35 3	3025	56 4 45	3017
	JUPITER W.	34 21 18	2959	35 52 22	2953	37 23 33	2947	38 54 52	2940
	Regulus W.	15 44 38	3089	17 13 1	3070	18 41 48	3053	20 10 56	3038
	Spica E.	39 18 19	3093	37 50 0	3094	36 21 43	3095	34 53 26	3096
	Antares E.	85 5 29	3040	83 36 6	3035	82 6 37	3029	80 37 0	3023
	SUN E.	137 6 44	3386	135 44 11	3380	134 21 32	3373	132 58 45	3366
23	Aldebaran W.	107 44 29	2951	109 15 43	2943	110 47 7	2934	112 18 42	2925
	Pollux W.	63 35 44	2976	65 6 27	2967	66 37 21	2957	68 8 27	2947
	JUPITER W.	46 33 41	2903	48 5 56	2895	49 38 22	2886	51 10 58	2877
	Regulus W.	27 40 43	2977	29 11 24	2966	30 42 19	2955	32 13 28	2945
	Antares E.	73 6 59	2989	71 36 33	2981	70 5 57	2973	68 35 12	2965
	SUN E.	126 2 42	3326	124 39 1	3317	123 15 9	3308	121 51 7	3298
24	Pollux W.	75 47 6	2896	77 19 30	2885	78 52 8	2873	80 25 1	2861
	JUPITER W.	58 57 1	2828	60 30 53	2817	62 4 59	2805	63 39 20	2793
	Regulus W.	39 52 42	2887	41 25 17	2875	42 58 7	2863	44 31 13	2851
	Antares E.	60 58 48	2923	59 26 58	2913	57 54 56	2904	56 22 42	2894
	SUN E.	114 47 55	3244	113 22 38	3232	111 57 7	3220	110 31 21	3207
25	Pollux W.	88 13 26	2798	89 47 57	2784	91 22 46	2770	92 57 54	2756
	JUPITER W.	71 35 4	2731	73 11 3	2717	74 47 20	2703	76 23 56	2689
	Regulus W.	52 20 49	2785	53 55 37	2771	55 30 43	2756	57 6 8	2741
	Antares E.	48 38 22	2845	47 4 52	2835	45 31 9	2825	43 57 13	2815
	SUN E.	103 18 36	3138	101 51 13	3123	100 23 32	3108	98 55 32	3092
26	Pollux W.	100 58 22	2680	102 35 29	2665	104 12 56	2649	105 50 45	2633
	JUPITER W.	84 31 49	2613	86 10 26	2597	87 49 24	2581	89 28 45	2565
	Regulus W.	65 8 14	2665	66 45 42	2649	68 23 31	2632	70 1 43	2615
	SUN E.	91 30 40	3010	90 0 40	2993	88 30 18	2975	86 59 34	2958
27	JUPITER W.	97 51 13	2480	99 32 54	2468	101 15 0	2445	102 57 30	2427
	Regulus W.	78 18 31	2528	79 59 5	2511	81 40 3	2493	83 21 26	2475
	Spica W.	25 8 9	2710	26 44 36	2672	28 21 53	2637	29 59 58	2604
	SUN E.	79 20 12	2865	77 47 9	2846	76 13 41	2827	74 39 48	2808
28	JUPITER W.	111 36 25	2338	113 21 29	2320	115 6 59	2308	116 52 55	2285
	Regulus W.	91 54 42	2385	93 38 38	2367	95 23 1	2349	97 7 49	2331
	Spica W.	38 20 43	2467	40 2 43	2442	41 45 18	2419	43 28 26	2396
	SUN E.	66 44 5	2711	65 7 40	2691	63 30 48	2672	61 53 31	2653
29	Regulus W.	105 58 20	2244	107 45 43	2227	109 33 30	2211	111 21 41	2194
	Spica W.	52 12 0	2291	53 58 12	2272	55 44 53	2253	57 32 2	2235
	SUN E.	53 40 41	2560	52 0 51	2543	50 20 37	2525	48 39 58	2508
30	Spica W.	66 34 19	2152	68 24 0	2137	70 14 3	2123	72 4 28	2109
	SUN E.	40 10 56	2429	38 28 2	2415	36 44 49	2402	35 1 17	2389

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
21	JUPITER W. Spica E. Antares E.	• • • 28 18 14 45 11 31 91 1 56	2981 3094 3060	• • • 29 48 50 43 43 14 89 32 58	2976 3093 3056	• • • 31 19 32 42 14 56 88 3 55	2971 3093 3051	• • • 32 50 21 40 46 38 86 34 45	2965 3092 3046
22	Aldebaran W. Pollux W. JUPITER W. Regulus W. Spica E. Antares E. SUN E.	101 41 7 57 34 37 40 26 20 21 40 22 33 25 12 79 7 16 131 35 50	2980 3009 2934 3024 3099 3018 3359	103 11 44 59 4 38 41 57 56 23 10 5 31 57 1 77 37 25 130 12 47	2973 3001 2927 3012 3103 3010 3351	104 42 30 60 34 50 43 29 41 24 40 3 30 28 55 76 7 25 128 49 35	2966 2993 2919 3000 3108 3003 3343	106 13 25 62 5 12 45 1 36 26 10 16 29 0 55 74 37 16 127 26 13	2959 2985 2911 2989 3115 2996 3335
23	Aldebaran W. Pollux W. JUPITER W. Regulus W. Antares E. SUN E.	113 50 29 69 39 46 52 43 46 33 44 50 67 4 16 120 26 53	2916 2938 2868 2934 2958 3288	115 22 27 71 11 17 54 16 46 35 16 26 65 33 10 119 2 27	2907 2928 2858 2922 2950 3277	116 54 37 72 43 0 55 49 58 36 48 17 64 1 54 117 37 49	2897 2918 2848 2911 2941 3266	118 27 0 74 14 56 57 23 23 38 20 22 62 30 27 74 37 16 116 12 59	2887 2907 2838 2899 2932 2996 3255
24	Pollux W. JUPITER W. Regulus W. Antares E. SUN E.	81 58 10 65 13 57 46 4 35 54 50 15 109 5 20	2849 2781 2838 2884 3194	83 31 34 66 48 49 47 38 13 53 17 36 107 39 4	2836 2769 2825 2874 3180	85 5 15 68 23 57 49 12 7 51 44 44 106 12 31	2824 2756 2812 2864 3167	86 39 12 69 59 22 50 46 19 50 11 39 104 45 42	2811 2744 2798 2855 3153
25	Pollux W. JUPITER W. Regulus W. Antares E. SUN E.	94 33 20 78 0 51 58 41 53 42 23 5 97 27 13	2741 2675 2726 2806 3077	96 9 6 79 38 5 60 17 57 40 48 44 95 58 35	2726 2660 2711 2797 3060	97 45 11 81 15 39 61 54 22 39 14 12 94 29 37	2711 2644 2696 2788 3044	99 21 36 82 53 34 63 31 8 37 39 28 93 0 19	2695 2629 2681 2780 3027
26	Pollux W. JUPITER W. Regulus W. SUN E.	107 28 55 91 8 28 71 40 18 85 28 28	2616 2548 2598 2939	109 7 28 92 48 34 73 19 16 83 56 59	2600 2532 2581 2921	110 46 23 94 29 3 74 58 37 82 25 7	2583 2515 2564 2902	112 25 41 96 9 56 76 38 22 80 52 51	2566 2497 2546 2884
27	JUPITER W. Regulus W. Spica W. SUN E.	104 40 26 85 3 14 31 38 47 73 5 30	2409 2457 2574 2788	106 23 47 86 45 28 33 18 18 71 30 47	2391 2439 2545 2769	108 7 34 88 28 7 34 58 29 69 55 39	2374 2422 2518 2750	109 51 46 90 11 11 36 39 18 68 20 5	2356 2403 2492 2730
28	JUPITER W. Regulus W. Spica W. SUN E.	118 39 17 98 53 4 45 12 7 60 15 48	2267 2313 2374 2634	120 26 5 100 38 44 46 56 20 58 37 39	2249 2295 2352 2615	122 13 19 102 24 51 48 41 3 56 59 5	2232 2278 2331 2597	124 0 59 104 11 23 50 26 17 55 20 6	2215 2261 2311 2578
29	Regulus W. Spica W. SUN E.	113 10 17 59 19 38 46 58 55	2178 2217 2491	114 59 17 61 7 40 45 17 29	2164 2200 2475	116 48 39 62 56 8 43 35 40	2149 2183 2459	118 38 24 64 45 1 41 53 29	2134 2167 2444
30	Spica W. SUN E.	73 55 14 33 17 26	2096 2377	75 46 20 31 33 18	2083 2366	77 37 45 29 48 54	2072 2356	79 29 28 28 4 15	2062 2346

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sideral Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ' "	"	' "	s	m s	s
Sat.	1	20 54 51.55	10.233	S. 17 24 29.7	+ 41.88	16 15.72	68.37	13 36.45	0.375
SUN.	2	20 58 56.70	10.198	17 7 35.3	42.65	16 15.58	68.25	13 45.02	0.340
Mon.	3	21 3 1.02	10.164	16 50 22.8	43.39	16 15.43	68.14	13 52.77	0.305
Tues.	4	21 7 4.51	10.128	16 32 52.7	+ 44.12	16 15.28	68.02	13 59.69	0.271
Wed.	5	21 11 7.18	10.094	16 15 5.2	44.83	16 15.13	67.91	14 5.79	0.237
Thur.	6	21 15 9.01	10.060	15 57 1.1	45.53	16 14.97	67.79	14 11.04	0.202
Frid.	7	21 19 10.00	10.025	15 38 40.5	+ 46.19	16 14.81	67.68	14 15.47	0.168
Sat.	8	21 23 10.17	9.991	15 20 4.1	46.85	16 14.65	67.56	14 19.07	0.134
SUN.	9	21 27 9.52	9.957	15 1 12.0	47.48	16 14.49	67.44	14 21.87	0.100
Mon.	10	21 31 8.05	9.923	14 42 4.9	+ 48.10	16 14.32	67.33	14 23.83	0.066
Tues.	11	21 35 5.78	9.890	14 22 43.0	48.71	16 14.14	67.22	14 25.00	0.033
Wed.	12	21 39 2.72	9.857	14 3 7.0	49.30	16 13.96	67.11	14 25.38	0.000
Thur.	13	21 42 58.87	9.824	13 43 17.0	+ 49.87	16 13.77	67.00	14 24.96	0.033
Frid.	14	21 46 54.23	9.792	13 23 13.7	50.43	16 13.58	66.90	14 23.78	0.065
Sat.	15	21 50 48.83	9.760	13 2 57.3	50.96	16 13.39	66.79	14 21.84	0.096
SUN.	16	21 54 42.68	9.729	12 42 28.3	+ 51.47	16 13.19	66.69	14 19.14	0.126
Mon.	17	21 58 35.81	9.699	12 21 47.1	51.97	16 12.99	66.59	14 15.72	0.157
Tues.	18	22 2 28.23	9.670	12 0 54.1	52.45	16 12.79	66.49	14 11.61	0.186
Wed.	19	22 6 19.94	9.641	11 39 49.6	+ 52.92	16 12.58	66.39	14 6.77	0.215
Thur.	20	22 10 10.97	9.613	11 18 34.1	53.37	16 12.36	66.29	14 1.26	0.243
Frid.	21	22 14 1.34	9.585	10 57 8.1	53.80	16 12.14	66.19	13 55.09	0.270
Sat.	22	22 17 51.06	9.558	10 35 31.8	+ 54.22	16 11.91	66.09	13 48.27	0.297
SUN.	23	22 21 40.14	9.532	10 13 45.8	54.62	16 11.68	66.00	13 40.83	0.323
Mon.	24	22 25 28.60	9.507	9 51 50.2	55.01	16 11.45	65.91	13 32.75	0.348
Tues.	25	22 29 16.48	9.483	9 29 45.5	+ 55.38	16 11.22	65.82	13 24.11	0.372
Wed.	26	22 33 3.77	9.459	9 7 32.3	55.72	16 10.99	65.73	13 14.87	0.396
Thur.	27	22 36 50.50	9.436	8 45 10.7	56.06	16 10.75	65.65	13 5.07	0.419
Frid.	28	22 40 36.69	9.414	8 22 41.4	+ 56.38	16 10.51	65.57	12 54.74	0.442
Sat.	29	22 44 22.34	9.392	8 0 4.5	56.68	16 10.27	65.49	12 43.86	0.464
SUN.	30	22 48 7.47	9.370	S. 7 37 20.7	+ 56.97	16 10.02	65.42	12 32.46	0.486

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0^s.18 from the sideral time.
The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ' "	"	m s	s	h m s
Sat.	1	20 54 49.22	10.231	S. 17 24 39.1	+41.87	13 36.36	0.375	20 41 12.86
SUN.	2	20 58 54.36	10.197	17 7 45.0	42.64	13 44.94	0.340	20 45 9.42
Mon.	3	21 2 58.67	10.163	16 50 32.8	43.38	13 52.70	0.305	20 49 5.97
Tues.	4	21 7 2.15	10.128	16 33 2.9	+44.11	13 59.62	0.271	20 53 2.53
Wed.	5	21 11 4.81	10.093	16 15 15.7	44.82	14 5.73	0.237	20 56 59.08
Thur.	6	21 15 6.63	10.059	15 57 11.8	45.52	14 10.99	0.202	21 0 55.64
Frid.	7	21 19 7.62	10.024	15 38 51.4	+46.18	14 15.43	0.168	21 4 52.19
Sat.	8	21 23 7.79	9.990	15 20 15.2	46.84	14 19.04	0.134	21 8 48.75
SUN.	9	21 27 7.14	9.956	15 1 23.3	47.47	14 21.84	0.100	21 12 45.30
Mon.	10	21 31 5.67	9.922	14 42 16.4	+48.09	14 23.81	0.066	21 16 41.86
Tues.	11	21 35 3.40	9.889	14 22 54.7	48.70	14 24.99	0.033	21 20 38.41
Wed.	12	21 39 0.34	9.856	14 3 18.8	49.29	14 25.38	0.000	21 24 34.96
Thur.	13	21 42 56.48	9.823	13 43 29.0	+49.86	14 24.96	0.033	21 28 31.52
Frid.	14	21 46 51.87	9.791	13 23 25.8	50.42	14 23.79	0.065	21 32 28.08
Sat.	15	21 50 46.49	9.760	13 3 9.5	50.96	14 21.86	0.096	21 36 24.63
SUN.	16	21 54 40.36	9.729	12 42 40.6	+51.47	14 19.17	0.126	21 40 21.19
Mon.	17	21 58 33.50	9.699	12 21 59.4	51.97	14 15.76	0.157	21 44 17.74
Tues.	18	22 2 25.94	9.670	12 1 6.5	52.45	14 11.65	0.186	21 48 14.29
Wed.	19	22 6 17.67	9.641	11 40 2.0	+52.92	14 6.82	0.215	21 52 10.85
Thur.	20	22 10 8.72	9.613	11 18 46.6	53.37	14 1.32	0.243	21 56 7.40
Frid.	21	22 13 59.11	9.586	10 57 20.6	53.80	13 55.15	0.270	22 0 3.96
Sat.	22	22 17 48.85	9.560	10 35 44.3	+54.22	13 48.34	0.297	22 4 0.51
SUN.	23	22 21 37.96	9.534	10 13 58.2	54.63	13 40.90	0.323	22 7 57.06
Mon.	24	22 25 26.45	9.509	9 52 2.6	55.01	13 32.83	0.348	22 11 53.62
Tues.	25	22 29 14.36	9.484	9 29 57.9	+55.38	13 24.19	0.372	22 15 50.17
Wed.	26	22 33 1.68	9.460	9 7 44.6	55.72	13 14.96	0.396	22 19 46.72
Thur.	27	22 36 48.44	9.437	8 45 22.9	56.06	13 5.16	0.419	22 23 43.28
Frid.	28	22 40 34.66	9.415	8 22 53.5	+56.38	12 54.83	0.442	22 27 39.83
Sat.	29	22 44 20.34	9.393	8 0 16.5	56.68	12 43.96	0.464	22 31 36.38
SUN.	30	22 48 5.50	9.371	S. 7 37 32.6	+56.97	12 32.56	0.486	22 35 32.94

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

Diff. for 1 Hour,
+ 9'.8565,
Table III.

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.				
		λ	λ'						
1	32	311 15 5.4	15 16.7	152.30	— 0.10	9.993 6219	+ 26.6	h m s 3 18 14.57	
2	33	312 16 0.2	16 11.4	152.26	0.22	9.993 6863	27.1	3 14 18.66	
3	34	313 16 53.8	17 4.9	152.21	0.32	9.993 7520	27.6	3 10 22.75	
4	35	314 17 46.2	17 57.2	152.16	— 0.41	9.993 8189	+ 28.1	3 6 26.84	
5	36	315 18 37.3	18 48.1	152.10	0.46	9.993 8871	28.7	3 2 30.93	
6	37	316 19 27.0	19 37.7	152.04	0.50	9.993 9566	29.3	2 58 35.02	
7	38	317 20 15.2	20 25.8	151.98	— 0.48	9.994 0277	+ 29.9	2 54 39.12	
8	39	318 21 1.9	21 12.3	151.92	0.44	9.994 1003	30.6	2 50 43.21	
9	40	319 21 47.0	21 57.3	151.85	0.38	9.994 1746	31.3	2 46 47.30	
10	41	320 22 30.5	22 40.7	151.78	— 0.29	9.994 2508	+ 32.1	2 42 51.39	
11	42	321 23 12.4	23 22.4	151.71	0.17	9.994 3288	32.9	2 38 55.48	
12	43	322 23 52.7	24 2.5	151.64	— 0.06	9.994 4088	33.7	2 34 59.57	
13	44	323 24 31.3	24 41.0	151.58	+ 0.06	9.994 4908	+ 34.6	2 31 3.66	
14	45	324 25 8.5	25 18.1	151.51	0.19	9.994 5748	35.5	2 27 7.75	
15	46	325 25 44.0	25 53.5	151.45	0.33	9.994 6610	36.3	2 23 11.84	
16	47	326 26 17.9	26 27.2	151.38	+ 0.45	9.994 7492	+ 37.2	2 19 15.94	
17	48	327 26 50.2	26 59.5	151.32	0.55	9.994 8395	38.1	2 15 20.03	
18	49	328 27 21.1	27 30.2	151.25	0.63	9.994 9319	38.9	2 11 24.12	
19	50	329 27 50.4	27 59.5	151.19	+ 0.70	9.995 0264	+ 39.7	2 7 28.21	
20	51	330 28 18.3	28 27.2	151.13	0.72	9.995 1228	40.6	2 3 32.30	
21	52	331 28 44.8	28 53.6	151.07	0.72	9.995 2211	41.4	1 59 36.40	
22	53	332 29 9.8	29 18.6	151.01	+ 0.70	9.995 3213	+ 42.2	1 55 40.49	
23	54	333 29 33.4	29 42.1	150.95	0.64	9.995 4231	42.9	1 51 44.58	
24	55	334 29 55.6	30 4.2	150.89	0.55	9.995 5266	43.5	1 47 48.67	
25	56	335 30 16.5	30 24.9	150.84	+ 0.47	9.995 6314	+ 43.9	1 43 52.76	
26	57	336 30 35.9	30 44.2	150.78	0.34	9.995 7374	44.4	1 39 56.86	
27	58	337 30 53.9	31 2.0	150.72	0.21	9.995 8445	44.8	1 36 0.95	
28	59	338 31 10.5	31 18.6	150.66	+ 0.07	9.995 9524	+ 45.1	1 32 5.04	
29	60	339 31 25.5	31 33.4	150.59	— 0.05	9.996 0611	45.4	1 28 9.13	
30	61	340 31 38.9	31 46.7	150.52	— 0.17	9.996 1703	+ 45.6	1 24 13.23	

NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.

Diff. for 1 Hour,
— 9".8296.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.

SEMIDIAMETER.

HORIZONTAL PARALLAX.

UPPER TRANSIT.

AGE.

Noon.

Midnight.

Noon.

Diff. for
1 Hour.

Midnight.

Diff. for
1 Hour.Meridian of
Greenwich.Diff. for
1 Hour.

Noon.

	' "	' "	' "	"	' "	"	h m	m	d
1	16 44.9	16 45.8	61 22.3	+ 0.49	61 25.6	+ 0.06	0	0	28.6
2	16 45.3	16 43.4	61 23.8	- 0.37	61 16.7	- 0.79	0	26.1	0.1
3	16 40.1	16 35.7	61 4.8	1.18	60 48.4	1.53	1	26.0	1.1
4	16 30.2	16 23.8	60 28.1	- 1.83	60 4.5	- 2.07	2	22.0	2.1
5	16 16.7	16 9.1	59 38.4	2.25	59 10.6	2.36	3	14.4	3.1
6	16 1.2	15 53.2	58 41.7	2.43	58 12.4	2.43	4	4.0	4.1
7	15 45.3	15 37.6	57 43.4	- 2.39	57 15.2	- 2.31	4	51.9	5.1
8	15 30.2	15 23.2	56 48.1	2.19	56 22.6	2.05	5	39.1	6.1
9	15 16.8	15 11.0	55 59.0	1.88	55 37.4	1.71	6	26.2	7.1
10	15 5.6	15 0.9	55 17.9	- 1.53	55 0.7	- 1.34	7	13.9	8.1
11	14 56.8	14 53.4	54 45.7	1.16	54 32.9	0.98	8	2.3	9.1
12	14 50.5	14 48.2	54 22.3	0.80	54 13.8	0.63	8	51.2	10.1
13	14 46.4	14 45.1	54 7.3	- 0.46	54 2.6	- 0.31	9	40.3	11.1
14	14 44.3	14 44.0	53 59.8	- 0.17	53 58.6	- 0.04	10	28.9	12.1
15	14 44.1	14 44.6	53 58.9	+ 0.09	54 0.7	+ 0.20	11	16.5	13.1
16	14 45.4	14 46.6	54 3.8	+ 0.31	54 8.2	+ 0.41	12	2.8	14.1
17	14 48.1	14 50.0	54 13.7	0.51	54 20.4	0.61	12	47.6	15.1
18	14 52.1	14 54.6	54 28.2	0.70	54 37.1	0.79	13	31.3	16.1
19	14 57.3	15 0.3	54 47.2	+ 0.88	54 58.3	+ 0.98	14	14.3	17.1
20	15 3.7	15 7.3	55 10.6	1.08	55 24.1	1.18	14	57.2	18.1
21	15 11.4	15 15.7	55 38.8	1.28	55 54.8	1.38	15	41.0	19.1
22	15 20.4	15 25.4	56 12.0	+ 1.49	56 30.4	+ 1.59	16	26.6	20.1
23	15 30.7	15 36.4	56 50.0	1.68	57 10.8	1.77	17	14.8	21.1
24	15 42.3	15 48.4	57 32.5	1.84	57 55.0	1.90	18	6.6	22.1
25	15 54.7	16 1.1	58 18.1	+ 1.93	58 41.4	+ 1.93	19	2.2	23.1
26	16 7.4	16 13.4	59 4.4	1.89	59 26.8	1.82	20	1.5	24.1
27	16 19.2	16 24.5	59 47.9	1.69	60 7.4	1.52	21	3.2	25.1
28	16 29.2	16 33.0	60 24.5	+ 1.30	60 38.6	+ 1.03	22	5.2	26.1
29	16 36.0	16 37.8	60 49.3	0.72	60 56.0	+ 0.38	23	5.8	27.1
30	16 38.5	16 37.9	60 58.5	+ 0.02	60 56.5	- 0.36	0	0	28.1

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 1.					MONDAY 3.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	20 5 52.96	2.7179	S. 21 41 1.6	4.606	0	22 11 44.90	2.4942	S. 15 9 2.1	11.136
1	20 8 35.97	2.7157	21 36 20.2	4.773	1	22 14 14.37	2.4881	14 57 51.1	11.230
2	20 11 18.85	2.7135	21 31 28.8	4.939	2	22 16 43.47	2.4820	14 46 34.5	11.322
3	20 14 1.59	2.7110	21 26 27.5	5.104	3	22 19 12.21	2.4759	14 35 12.4	11.412
4	20 16 44.17	2.7083	21 21 16.3	5.269	4	22 21 40.58	2.4697	14 23 45.0	11.501
5	20 19 26.59	2.7056	21 15 55.2	5.433	5	22 24 8.58	2.4637	14 12 12.3	11.588
6	20 22 8.84	2.7027	21 10 24.3	5.596	6	22 26 36.22	2.4576	14 0 34.4	11.673
7	20 24 50.92	2.6998	21 4 43.7	5.757	7	22 29 3.49	2.4514	13 48 51.5	11.756
8	20 27 32.82	2.6967	20 58 53.4	5.918	8	22 31 30.39	2.4452	13 37 3.7	11.837
9	20 30 14.52	2.6933	20 52 53.5	6.078	9	22 33 56.92	2.4392	13 25 11.1	11.916
10	20 32 56.02	2.6899	20 46 44.0	6.237	10	22 36 23.09	2.4331	13 13 13.8	11.992
11	20 35 37.31	2.6864	20 40 25.1	6.393	11	22 38 48.89	2.4270	13 1 12.0	12.067
12	20 38 18.39	2.6827	20 33 56.8	6.549	12	22 41 14.33	2.4209	12 49 5.7	12.141
13	20 40 59.24	2.6789	20 27 19.2	6.704	13	22 43 39.40	2.4148	12 36 55.1	12.212
14	20 43 39.86	2.6751	20 20 32.3	6.858	14	22 46 4.11	2.4088	12 24 40.3	12.282
15	20 46 20.25	2.6711	20 13 36.2	7.010	15	22 48 28.46	2.4027	12 12 21.3	12.349
16	20 49 0.39	2.6669	20 6 31.1	7.161	16	22 50 52.44	2.3967	11 59 58.4	12.414
17	20 51 40.28	2.6627	19 59 16.9	7.311	17	22 53 16.07	2.3908	11 47 31.6	12.478
18	20 54 19.91	2.6583	19 51 53.8	7.458	18	22 55 39.34	2.3848	11 35 1.0	12.541
19	20 56 59.28	2.6539	19 44 21.9	7.605	19	22 58 2.25	2.3789	11 22 26.7	12.601
20	20 59 38.38	2.6493	19 36 41.2	7.751	20	23 0 24.81	2.3730	11 9 48.9	12.659
21	21 2 17.20	2.6447	19 28 51.8	7.894	21	23 2 47.01	2.3672	10 57 7.6	12.716
22	21 4 55.74	2.6400	19 20 53.8	8.037	22	23 5 8.87	2.3613	10 44 23.0	12.770
23	21 7 34.00	2.6352	S. 19 12 47.4	8.177	23	23 7 30.37	2.3555	S. 10 31 35.2	12.822
SUNDAY 2.					TUESDAY 4.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	21 10 11.97	2.6303	S. 19 4 32.6	8.316	0	23 9 51.53	2.3497	S. 10 18 44.3	12.873
1	21 12 49.64	2.6253	18 56 9.5	8.454	1	23 12 12.34	2.3441	10 5 50.4	12.922
2	21 15 27.01	2.6202	18 47 38.1	8.590	2	23 14 32.82	2.3384	9 52 53.6	12.970
3	21 18 4.07	2.6150	18 38 58.6	8.724	3	23 16 52.95	2.3327	9 39 54.0	13.015
4	21 20 40.81	2.6097	18 30 11.2	8.857	4	23 19 12.74	2.3271	9 26 51.8	13.058
5	21 23 17.24	2.6045	18 21 15.9	8.987	5	23 21 32.20	2.3216	9 13 47.0	13.100
6	21 25 53.35	2.5992	18 12 12.7	9.117	6	23 23 51.33	2.3161	9 0 39.8	13.141
7	21 28 29.14	2.5937	18 3 1.8	9.245	7	23 26 10.13	2.3106	8 47 30.1	13.180
8	21 31 4.60	2.5882	17 53 43.3	9.370	8	23 28 28.60	2.3052	8 34 18.2	13.216
9	21 33 39.73	2.5827	17 44 17.4	9.494	9	23 30 46.75	2.2997	8 21 4.2	13.251
10	21 36 14.53	2.5771	17 34 44.0	9.617	10	23 33 4.57	2.2944	8 7 48.1	13.284
11	21 38 48.98	2.5713	17 25 3.3	9.737	11	23 35 22.08	2.2892	7 54 30.1	13.316
12	21 41 23.09	2.5657	17 15 15.5	9.856	12	23 37 39.27	2.2839	7 41 10.2	13.346
13	21 43 56.86	2.5599	17 5 20.6	9.972	13	23 39 56.15	2.2787	7 27 48.6	13.373
14	21 46 30.28	2.5541	16 55 18.8	10.087	14	23 42 12.72	2.2737	7 14 25.4	13.400
15	21 49 3.35	2.5482	16 45 10.1	10.201	15	23 44 28.99	2.2686	7 1 0.6	13.426
16	21 51 36.07	2.5423	16 34 54.7	10.312	16	23 46 44.95	2.2636	6 47 34.3	13.449
17	21 54 8.43	2.5364	16 24 32.6	10.422	17	23 49 0.62	2.2587	6 34 6.7	13.470
18	21 56 40.44	2.5305	16 14 4.1	10.529	18	23 51 15.99	2.2537	6 20 37.9	13.490
19	21 59 12.09	2.5244	16 3 29.1	10.636	19	23 53 31.06	2.2488	6 7 7.9	13.509
20	22 1 43.37	2.5184	15 52 47.8	10.739	20	23 55 45.85	2.2441	5 53 36.8	13.527
21	22 4 14.30	2.5124	15 42 0.4	10.841	21	23 58 0.35	2.2393	5 40 4.7	13.542
22	22 6 44.86	2.5063	15 31 6.9	10.942	22	0 0 14.57	2.2347	5 26 31.8	13.555
23	22 9 15.06	2.5003	15 20 7.4	11.040	23	0 2 28.51	2.2301	5 12 58.1	13.567
24	22 11 44.90	2.4942	S. 15 9 2.1	11.136	24	0 4 42.18	2.2256	S. 4 59 23.7	13.578

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 5.					FRIDAY 7.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	0 4 42.18	2.2256	S. 4 59 23.7	13.578	0	1 47 29.68	2.0821	N. 5 39 35.9	12.600
1	0 6 55.58	2.2211	4 45 48.7	13.588	1	1 49 34.56	2.0807	5 52 10.5	12.553
2	0 9 8.71	2.2166	4 32 13.2	13.596	2	1 51 39.36	2.0792	6 4 42.3	12.507
3	0 11 21.57	2.2122	4 18 37.2	13.602	3	1 53 44.07	2.0779	6 17 11.3	12.459
4	0 13 34.18	2.2080	4 5 0.9	13.607	4	1 55 48.71	2.0767	6 29 37.4	12.411
5	0 15 46.53	2.2037	3 51 24.3	13.611	5	1 57 53.27	2.0754	6 42 0.6	12.361
6	0 17 58.62	2.1995	3 37 47.6	13.612	6	1 59 57.76	2.0743	6 54 20.7	12.309
7	0 20 10.47	2.1954	3 24 10.8	13.613	7	2 2 2.19	2.0732	7 6 37.7	12.258
8	0 22 22.07	2.1913	3 10 34.0	13.612	8	2 4 6.55	2.0721	7 18 51.7	12.207
9	0 24 33.43	2.1873	2 56 57.3	13.611	9	2 6 10.84	2.0711	7 31 2.5	12.153
10	0 26 44.55	2.1834	2 43 20.7	13.607	10	2 8 15.08	2.0702	7 43 10.1	12.099
11	0 28 55.44	2.1796	2 29 44.4	13.602	11	2 10 19.27	2.0693	7 55 14.4	12.045
12	0 31 6.10	2.1758	2 16 8.4	13.596	12	2 12 23.40	2.0685	8 7 15.5	11.990
13	0 33 16.54	2.1721	2 2 32.9	13.588	13	2 14 27.49	2.0677	8 19 13.2	11.933
14	0 35 26.75	2.1683	1 48 57.8	13.580	14	2 16 31.53	2.0670	8 31 7.5	11.877
15	0 37 36.74	2.1647	1 35 23.3	13.570	15	2 18 35.53	2.0663	8 42 58.4	11.819
16	0 39 46.52	2.1612	1 21 49.4	13.558	16	2 20 39.49	2.0657	8 54 45.8	11.761
17	0 41 56.09	2.1577	1 8 16.3	13.546	17	2 22 43.41	2.0652	9 6 29.7	11.702
18	0 44 5.45	2.1543	0 54 43.9	13.532	18	2 24 47.31	2.0647	9 18 10.0	11.642
19	0 46 14.61	2.1510	0 41 12.4	13.517	19	2 26 51.17	2.0641	9 29 46.7	11.582
20	0 48 23.57	2.1477	0 27 41.9	13.500	20	2 28 55.00	2.0637	9 41 19.8	11.520
21	0 50 32.34	2.1445	0 14 12.4	13.483	21	2 30 58.81	2.0633	9 52 49.1	11.458
22	0 52 40.91	2.1413	S. 0 0 43.9	13.465	22	2 33 2.60	2.0630	10 4 14.7	11.396
23	0 54 49.30	2.1383	N. 0 12 43.4	13.444	23	2 35 6.37	2.0627	N. 10 15 36.6	11.332
THURSDAY 6.					SATURDAY 8.				
0	0 56 57.51	2.1353	N. 0 26 9.4	13.422	0	2 37 10.13	2.0625	N. 10 26 54.6	11.268
1	0 59 5.54	2.1323	0 39 34.1	13.401	1	2 39 13.87	2.0623	10 38 8.8	11.203
2	1 1 13.39	2.1295	0 52 57.5	13.378	2	2 41 17.61	2.0622	10 49 19.0	11.137
3	1 3 21.08	2.1267	1 6 19.5	13.353	3	2 43 21.33	2.0620	11 0 25.3	11.072
4	1 5 28.60	2.1239	1 19 39.9	13.327	4	2 45 25.05	2.0620	11 11 27.6	11.005
5	1 7 35.95	2.1212	1 32 58.7	13.300	5	2 47 28.77	2.0620	11 22 25.9	10.938
6	1 9 43.14	2.1186	1 46 15.9	13.273	6	2 49 32.49	2.0621	11 33 20.2	10.871
7	1 11 50.18	2.1160	1 59 31.5	13.245	7	2 51 36.22	2.0622	11 44 10.4	10.802
8	1 13 57.06	2.1135	2 12 45.3	13.214	8	2 53 39.95	2.0622	11 54 56.4	10.732
9	1 16 3.80	2.1111	2 25 57.2	13.182	9	2 55 43.68	2.0623	12 5 38.2	10.662
10	1 18 10.39	2.1087	2 39 7.2	13.151	10	2 57 47.43	2.0626	12 16 15.8	10.592
11	1 20 16.84	2.1064	2 52 15.3	13.118	11	2 59 51.19	2.0628	12 26 49.2	10.521
12	1 22 23.16	2.1042	3 5 21.4	13.084	12	3 1 54.97	2.0631	12 37 18.3	10.448
13	1 24 29.35	2.1020	3 18 25.4	13.048	13	3 3 58.76	2.0634	12 47 43.0	10.376
14	1 26 35.40	2.0998	3 31 27.2	13.013	14	3 6 2.58	2.0638	12 58 3.4	10.303
15	1 28 41.33	2.0978	3 44 26.9	12.977	15	3 8 6.42	2.0642	13 8 19.4	10.229
16	1 30 47.14	2.0958	3 57 24.4	12.938	16	3 10 10.28	2.0646	13 18 30.9	10.155
17	1 32 52.83	2.0939	4 10 19.5	12.898	17	3 12 14.17	2.0651	13 28 38.0	10.081
18	1 34 58.41	2.0921	4 23 12.2	12.858	18	3 14 18.09	2.0656	13 38 40.6	10.005
19	1 37 3.88	2.0902	4 36 2.5	12.818	19	3 16 22.04	2.0661	13 48 38.6	9.929
20	1 39 9.24	2.0884	4 48 50.4	12.777	20	3 18 26.02	2.0666	13 58 32.1	9.853
21	1 41 14.49	2.0867	5 1 35.7	12.733	21	3 20 30.03	2.0672	14 8 21.0	9.776
22	1 43 19.65	2.0852	5 14 18.4	12.690	22	3 22 34.08	2.0678	14 18 5.2	9.697
23	1 45 24.71	2.0836	5 26 58.5	12.646	23	3 24 38.17	2.0685	14 27 44.7	9.619
24	1 47 29.68	2.0821	N. 5 39 35.9	12.600	24	3 26 42.30	2.0692	N. 14 37 19.5	9.540

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 9.					TUESDAY 11.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	3 26 42.30	2.0692	N.14 37 19.5	9.540	0	5 7 9.80	2.1196	N.20 35 1.5	5.193
1	3 28 46.47	2.0698	14 46 49.5	9.461	1	5 9 17.01	2.1207	20 40 10.1	5.093
2	3 30 50.68	2.0706	14 56 14.8	9.382	2	5 11 24.28	2.1217	20 45 12.7	4.993
3	3 32 54.94	2.0714	15 5 35.3	9.302	3	5 13 31.61	2.1227	20 50 9.3	4.892
4	3 34 59.25	2.0722	15 14 51.0	9.220	4	5 15 39.01	2.1237	20 54 59.8	4.791
5	3 37 3.60	2.0729	15 24 1.7	9.138	5	5 17 46.46	2.1247	20 59 44.2	4.689
6	3 39 8.00	2.0738	15 33 7.6	9.057	6	5 19 53.98	2.1257	21 4 22.5	4.587
7	3 41 12.46	2.0747	15 42 8.5	8.973	7	5 22 1.55	2.1267	21 8 54.7	4.486
8	3 43 16.96	2.0755	15 51 4.4	8.891	8	5 24 9.18	2.1277	21 13 20.8	4.383
9	3 45 21.52	2.0765	15 59 55.4	8.807	9	5 26 16.87	2.1286	21 17 40.7	4.280
10	3 47 26.14	2.0774	16 8 41.3	8.722	10	5 28 24.61	2.1294	21 21 54.4	4.177
11	3 49 30.81	2.0783	16 17 22.1	8.638	11	5 30 32.40	2.1303	21 26 1.9	4.074
12	3 51 35.54	2.0793	16 25 57.9	8.553	12	5 32 40.25	2.1312	21 30 3.3	3.971
13	3 53 40.33	2.0802	16 34 28.5	8.467	13	5 34 48.15	2.1321	21 33 58.4	3.867
14	3 55 45.17	2.0812	16 42 54.0	8.382	14	5 36 56.10	2.1328	21 37 47.3	3.762
15	3 57 50.08	2.0823	16 51 14.3	8.295	15	5 39 4.09	2.1336	21 41 29.9	3.658
16	3 59 55.05	2.0834	16 59 29.4	8.207	16	5 41 12.13	2.1344	21 45 6.3	3.554
17	4 2 0.09	2.0844	17 7 39.2	8.120	17	5 43 20.22	2.1352	21 48 36.4	3.450
18	4 4 5.18	2.0854	17 15 43.8	8.032	18	5 45 28.35	2.1358	21 52 0.3	3.345
19	4 6 10.34	2.0866	17 23 43.1	7.944	19	5 47 36.52	2.1365	21 55 17.8	3.240
20	4 8 15.57	2.0877	17 31 37.1	7.855	20	5 49 44.73	2.1372	21 58 29.1	3.135
21	4 10 20.86	2.0887	17 39 25.7	7.765	21	5 51 52.98	2.1378	22 1 34.0	3.029
22	4 12 26.22	2.0899	17 47 8.9	7.675	22	5 54 1.27	2.1385	22 4 32.6	2.924
23	4 14 31.65	2.0910	N.17 54 46.7	7.585	23	5 56 9.60	2.1390	N.22 7 24.9	2.818
MONDAY 10.					WEDNESDAY 12.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	4 16 37.14	2.0921	N.18 2 19.1	7.494	0	5 58 17.95	2.1395	N.22 10 10.8	2.712
1	4 18 42.70	2.0933	18 9 46.0	7.403	1	6 0 26.34	2.1401	22 12 50.4	2.607
2	4 20 48.34	2.0945	18 17 7.5	7.312	2	6 2 34.76	2.1405	22 15 23.6	2.500
3	4 22 54.04	2.0956	18 24 23.4	7.219	3	6 4 43.20	2.1409	22 17 50.4	2.393
4	4 24 59.81	2.0967	18 31 33.8	7.127	4	6 6 51.67	2.1414	22 20 10.8	2.287
5	4 27 5.64	2.0978	18 38 38.7	7.034	5	6 9 0.17	2.1417	22 22 24.9	2.181
6	4 29 11.55	2.0990	18 45 37.9	6.940	6	6 11 8.68	2.1421	22 24 32.5	2.074
7	4 31 17.53	2.1002	18 52 31.5	6.847	7	6 13 17.22	2.1424	22 26 33.8	1.967
8	4 33 23.58	2.1014	18 59 19.5	6.753	8	6 15 25.77	2.1427	22 28 28.6	1.860
9	4 35 29.70	2.1026	19 6 1.9	6.658	9	6 17 34.34	2.1429	22 30 17.0	1.753
10	4 37 35.89	2.1037	19 12 38.5	6.562	10	6 19 42.92	2.1432	22 31 59.0	1.647
11	4 39 42.15	2.1049	19 19 9.4	6.467	11	6 21 51.52	2.1433	22 33 34.6	1.539
12	4 41 48.48	2.1061	19 25 34.6	6.372	12	6 24 0.12	2.1434	22 35 3.7	1.432
13	4 43 54.88	2.1072	19 31 54.0	6.276	13	6 26 8.73	2.1435	22 36 26.4	1.325
14	4 46 1.35	2.1084	19 38 7.7	6.180	14	6 28 17.34	2.1436	22 37 42.7	1.217
15	4 48 7.89	2.1096	19 44 15.6	6.082	15	6 30 25.96	2.1437	22 38 52.5	1.110
16	4 50 14.50	2.1107	19 50 17.6	5.985	16	6 32 34.58	2.1437	22 39 55.9	1.002
17	4 52 21.18	2.1118	19 56 13.8	5.887	17	6 34 43.20	2.1436	22 40 52.8	0.895
18	4 54 27.92	2.1130	20 2 4.1	5.789	18	6 36 51.81	2.1434	22 41 43.3	0.788
19	4 56 34.74	2.1142	20 7 48.5	5.691	19	6 39 0.41	2.1433	22 42 27.4	0.681
20	4 58 41.62	2.1152	20 13 27.0	5.592	20	6 41 9.01	2.1432	22 43 5.0	0.572
21	5 0 48.57	2.1163	20 18 59.6	5.493	21	6 43 17.59	2.1429	22 43 36.1	0.465
22	5 2 55.58	2.1174	20 24 26.2	5.394	22	6 45 26.16	2.1427	22 44 0.8	0.357
23	5 5 2.66	2.1185	20 29 46.9	5.294	23	6 47 34.72	2.1425	22 44 19.0	0.250
24	5 7 9.80	2.1196	N.20 35 1.5	5.193	24	6 49 43.26	2.1422	N.22 44 30.8	0.143

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 13.					SATURDAY 15.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	6 49 43.26	2.1422	N.22 44 30.8	0.143	0	8 31 27.03	2.0832	N.20 50 29.6	4.797
1	6 51 51.78	2.1418	22 44 36.2	+0.036	1	8 33 31.96	2.0812	20 45 38.9	4.892
2	6 54 0.28	2.1414	22 44 35.1	-0.072	2	8 35 36.78	2.0792	20 40 42.6	4.986
3	6 56 8.75	2.1409	22 44 27.6	0.179	3	8 37 41.47	2.0772	20 35 40.6	5.081
4	6 58 17.19	2.1404	22 44 13.6	0.286	4	8 39 46.04	2.0751	20 30 32.9	5.174
5	7 0 25.60	2.1399	22 43 53.3	0.392	5	8 41 50.48	2.0730	20 25 19.7	5.268
6	7 2 33.98	2.1394	22 43 26.5	0.500	6	8 43 54.80	2.0710	20 20 0.8	5.361
7	7 4 42.33	2.1388	22 42 53.3	0.607	7	8 45 59.00	2.0689	20 14 36.4	5.452
8	7 6 50.64	2.1382	22 42 13.7	0.713	8	8 48 3.07	2.0667	20 9 6.5	5.544
9	7 8 58.91	2.1375	22 41 27.7	0.820	9	8 50 7.01	2.0646	20 3 31.1	5.636
10	7 11 7.14	2.1367	22 40 35.3	0.927	10	8 52 10.82	2.0624	19 57 50.2	5.727
11	7 13 15.32	2.1360	22 39 36.4	1.033	11	8 54 14.50	2.0602	19 52 3.8	5.817
12	7 15 23.46	2.1352	22 38 31.3	1.138	12	8 56 18.05	2.0581	19 46 12.1	5.907
13	7 17 31.55	2.1344	22 37 19.8	1.245	13	8 58 21.47	2.0558	19 40 15.0	5.996
14	7 19 39.59	2.1336	22 36 1.9	1.352	14	9 0 24.75	2.0536	19 34 12.6	6.085
15	7 21 47.58	2.1327	22 34 37.6	1.457	15	9 2 27.90	2.0514	19 28 4.8	6.173
16	7 23 55.51	2.1317	22 33 7.0	1.562	16	9 4 30.92	2.0492	19 21 51.8	6.261
17	7 26 3.38	2.1307	22 31 30.1	1.667	17	9 6 33.81	2.0470	19 15 33.5	6.348
18	7 28 11.19	2.1297	22 29 46.9	1.772	18	9 8 36.56	2.0447	19 9 10.0	6.435
19	7 30 18.94	2.1286	22 27 57.4	1.878	19	9 10 39.17	2.0423	19 2 41.3	6.521
20	7 32 26.62	2.1275	22 26 1.5	1.982	20	9 12 41.64	2.0401	18 56 7.5	6.607
21	7 34 34.24	2.1264	22 23 59.4	2.087	21	9 14 43.98	2.0379	18 49 28.5	6.692
22	7 36 41.79	2.1252	22 21 51.0	2.192	22	9 16 46.19	2.0356	18 42 44.5	6.776
23	7 38 49.27	2.1240	N.22 19 36.4	2.296	23	9 18 48.25	2.0332	N.18 35 55.4	6.860
FRIDAY 14.					SUNDAY 16.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	7 40 56.67	2.1227	N.22 17 15.5	2.400	0	9 20 50.18	2.0310	N.18 29 1.3	6.943
1	7 43 4.00	2.1215	22 14 48.4	2.503	1	9 22 51.97	2.0287	18 22 2.2	7.026
2	7 45 11.25	2.1202	22 12 15.1	2.607	2	9 24 53.63	2.0264	18 14 58.2	7.108
3	7 47 18.42	2.1187	22 9 35.6	2.710	3	9 26 55.14	2.0241	18 7 49.2	7.190
4	7 49 25.50	2.1173	22 6 49.9	2.812	4	9 28 56.52	2.0218	18 0 35.4	7.270
5	7 51 32.50	2.1160	22 3 58.1	2.915	5	9 30 57.76	2.0195	17 53 16.8	7.351
6	7 53 39.42	2.1146	22 1 0.1	3.017	6	9 32 58.86	2.0172	17 45 53.3	7.432
7	7 55 46.25	2.1131	21 57 56.0	3.119	7	9 34 59.82	2.0148	17 38 25.0	7.510
8	7 57 52.99	2.1115	21 54 45.8	3.220	8	9 37 0.64	2.0126	17 30 52.1	7.588
9	7 59 59.63	2.1099	21 51 29.6	3.322	9	9 39 1.33	2.0103	17 23 14.4	7.667
10	8 2 6.18	2.1084	21 48 7.2	3.423	10	9 41 1.88	2.0080	17 15 32.0	7.744
11	8 4 12.64	2.1068	21 44 38.8	3.523	11	9 43 2.29	2.0057	17 7 45.1	7.821
12	8 6 19.00	2.1052	21 41 4.4	3.623	12	9 45 2.57	2.0035	16 59 53.5	7.897
13	8 8 25.26	2.1034	21 37 24.0	3.723	13	9 47 2.71	2.0012	16 51 57.4	7.972
14	8 10 31.41	2.1017	21 33 37.6	3.823	14	9 49 2.71	1.9988	16 43 56.8	8.047
15	8 12 37.47	2.1001	21 29 45.2	3.922	15	9 51 2.57	1.9966	16 35 51.7	8.122
16	8 14 43.42	2.0982	21 25 46.9	4.021	16	9 53 2.30	1.9943	16 27 42.1	8.197
17	8 16 49.26	2.0964	21 21 42.7	4.119	17	9 55 1.89	1.9921	16 19 28.1	8.269
18	8 18 54.99	2.0947	21 17 32.6	4.217	18	9 57 1.35	1.9898	16 11 9.8	8.341
19	8 21 0.62	2.0928	21 13 16.6	4.315	19	9 59 0.67	1.9876	16 2 47.2	8.413
20	8 23 6.13	2.0908	21 8 54.8	4.412	20	10 0 59.86	1.9854	15 54 20.2	8.485
21	8 25 11.52	2.0890	21 4 27.2	4.509	21	10 2 58.92	1.9832	15 45 49.0	8.555
22	8 27 16.81	2.0872	20 59 53.7	4.606	22	10 4 57.84	1.9810	15 37 13.6	8.625
23	8 29 21.98	2.0852	20 55 14.5	4.701	23	10 6 56.64	1.9788	15 28 34.0	8.694
24	8 31 27.03	2.0832	N.20 50 29.6	4.797	24	10 8 55.30	1.9766	N.15 19 50.3	8.762

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 17.					WEDNESDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	10 8 55.30	1.9766	N. 15 19 50.3	8.762	0	11 41 44.71	1.9028	N. 7 13 2.5	11.256
1	10 10 53.83	1.9745	15 11 2.5	8.831	1	11 43 38.86	1.9022	7 1 46.1	11.290
2	10 12 52.24	1.9724	15 2 10.6	8.898	2	11 45 32.97	1.9015	6 50 27.7	11.324
3	10 14 50.52	1.9702	14 53 14.7	8.964	3	11 47 27.04	1.9010	6 39 7.2	11.357
4	10 16 48.67	1.9682	14 44 14.9	9.030	4	11 49 21.09	1.9005	6 27 44.8	11.390
5	10 18 46.70	1.9661	14 35 11.1	9.096	5	11 51 15.10	1.8999	6 16 20.4	11.422
6	10 20 44.60	1.9640	14 26 3.4	9.160	6	11 53 9.08	1.8995	6 4 54.1	11.453
7	10 22 42.38	1.9619	14 16 51.9	9.224	7	11 55 3.04	1.8991	5 53 26.0	11.483
8	10 24 40.03	1.9599	14 7 36.5	9.287	8	11 56 56.97	1.8987	5 41 56.1	11.512
9	10 26 37.57	1.9579	13 58 17.4	9.349	9	11 58 50.89	1.8985	5 30 24.5	11.542
10	10 28 34.98	1.9559	13 48 54.6	9.412	10	12 0 44.79	1.8982	5 18 51.1	11.571
11	10 30 32.28	1.9540	13 39 28.0	9.473	11	12 2 38.68	1.8979	5 7 16.0	11.598
12	10 32 29.46	1.9521	13 29 57.8	9.533	12	12 4 32.55	1.8977	4 55 39.3	11.625
13	10 34 26.53	1.9502	13 20 24.0	9.593	13	12 6 26.41	1.8977	4 44 1.0	11.651
14	10 36 23.48	1.9482	13 10 46.6	9.653	14	12 8 20.27	1.8977	4 32 21.2	11.677
15	10 38 20.32	1.9464	13 1 5.6	9.712	15	12 10 14.13	1.8977	4 20 39.8	11.702
16	10 40 17.05	1.9446	12 51 21.2	9.769	16	12 12 7.99	1.8977	4 8 57.0	11.725
17	10 42 13.67	1.9427	12 41 33.3	9.827	17	12 14 1.86	1.8978	3 57 12.8	11.748
18	10 44 10.18	1.9409	12 31 42.0	9.883	18	12 15 55.73	1.8979	3 45 27.2	11.771
19	10 46 6.58	1.9392	12 21 47.3	9.939	19	12 17 49.61	1.8981	3 33 40.3	11.792
20	10 48 2.88	1.9375	12 11 49.3	9.994	20	12 19 43.50	1.8983	3 21 52.1	11.813
21	10 49 59.08	1.9358	12 1 48.0	10.048	21	12 21 37.41	1.8987	3 10 2.7	11.833
22	10 51 55.18	1.9341	11 51 43.5	10.102	22	12 23 31.34	1.8990	2 58 12.1	11.852
23	10 53 51.17	1.9324	N. 11 41 35.8	10.155	23	12 25 25.29	1.8993	N. 2 46 20.4	11.871
TUESDAY 18.					THURSDAY 20.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	10 55 47.07	1.9308	N. 11 31 24.9	10.207	0	12 27 19.26	1.8998	N. 2 34 27.6	11.889
1	10 57 42.87	1.9292	11 21 10.9	10.259	1	12 29 13.27	1.9003	2 22 33.7	11.907
2	10 59 38.58	1.9277	11 10 53.8	10.311	2	12 31 7.30	1.9008	2 10 38.8	11.923
3	11 1 34.20	1.9262	11 0 33.6	10.361	3	12 33 1.37	1.9015	1 58 42.9	11.939
4	11 3 29.73	1.9247	10 50 10.5	10.410	4	12 34 55.48	1.9022	1 46 46.1	11.954
5	11 5 25.17	1.9232	10 39 44.4	10.459	5	12 36 49.63	1.9029	1 34 48.4	11.968
6	11 7 20.52	1.9218	10 29 15.4	10.507	6	12 38 43.83	1.9037	1 22 49.9	11.982
7	11 9 15.79	1.9205	10 18 43.5	10.555	7	12 40 38.07	1.9045	1 10 50.6	11.994
8	11 11 10.98	1.9192	10 8 8.8	10.602	8	12 42 32.37	1.9054	0 58 50.6	12.007
9	11 13 6.09	1.9178	9 57 31.3	10.648	9	12 44 26.72	1.9062	0 46 49.8	12.018
10	11 15 1.12	1.9166	9 46 51.0	10.694	10	12 46 21.12	1.9072	0 34 48.4	12.028
11	11 16 56.08	1.9153	9 36 8.0	10.738	11	12 48 15.59	1.9084	0 22 46.4	12.037
12	11 18 50.96	1.9141	9 25 22.4	10.782	12	12 50 10.13	1.9095	N. 0 10 43.9	12.046
13	11 20 45.77	1.9130	9 14 34.1	10.826	13	12 52 4.73	1.9107	S. 0 1 19.1	12.054
14	11 22 40.52	1.9118	9 3 43.3	10.868	14	12 53 59.41	1.9119	0 13 22.6	12.062
15	11 24 35.20	1.9107	8 52 49.9	10.910	15	12 55 54.16	1.9131	0 25 26.5	12.068
16	11 26 29.81	1.9097	8 41 54.1	10.951	16	12 57 48.98	1.9144	0 37 30.8	12.074
17	11 28 24.36	1.9087	8 30 55.8	10.992	17	12 59 43.89	1.9158	0 49 35.4	12.079
18	11 30 18.85	1.9077	8 19 55.0	11.032	18	13 1 38.88	1.9172	1 1 40.3	12.083
19	11 32 13.29	1.9068	8 8 51.9	11.071	19	13 3 33.96	1.9188	1 13 45.4	12.087
20	11 34 7.67	1.9059	7 57 46.5	11.109	20	13 5 29.14	1.9204	1 25 50.7	12.089
21	11 36 2.00	1.9051	7 46 38.8	11.147	21	13 7 24.41	1.9220	1 37 56.1	12.091
22	11 37 56.28	1.9043	7 35 28.9	11.183	22	13 9 19.78	1.9237	1 50 1.6	12.092
23	11 39 50.52	1.9036	7 24 16.8	11.220	23	13 11 15.25	1.9254	2 2 7.2	12.092
24	11 41 44.71	1.9028	N. 7 13 2.5	11.256	24	13 13 10.83	1.9272	S. 2 14 12.7	12.091

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 21.					SUNDAY 23.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	13 13 10.83	1.9272	S. 2 14 12.7	12.091	0	14 48 54.39	2.0845	S. 11 37 27.4	11.021
1	13 15 6.52	1.9291	2 26 18.1	12.090	1	14 50 59.60	2.0892	11 48 27.3	10.974
2	13 17 2.32	1.9310	2 38 23.5	12.088	2	14 53 5.10	2.0940	11 59 24.3	10.927
3	13 18 58.24	1.9330	2 50 28.7	12.085	3	14 55 10.88	2.0988	12 10 18.5	10.879
4	13 20 54.28	1.9350	3 2 33.7	12.081	4	14 57 16.96	2.1037	12 21 9.8	10.829
5	13 22 50.44	1.9371	3 14 38.4	12.076	5	14 59 23.33	2.1086	12 31 58.0	10.778
6	13 24 46.73	1.9392	3 26 42.8	12.070	6	15 1 29.99	2.1136	12 42 43.2	10.727
7	13 26 43.15	1.9415	3 38 46.8	12.063	7	15 3 36.96	2.1187	12 53 25.3	10.674
8	13 28 39.71	1.9438	3 50 50.4	12.057	8	15 5 44.24	2.1238	13 4 4.1	10.620
9	13 30 36.41	1.9462	4 2 53.6	12.048	9	15 7 51.82	2.1289	13 14 39.7	10.565
10	13 32 33.25	1.9485	4 14 56.2	12.039	10	15 9 59.71	2.1341	13 25 11.9	10.508
11	13 34 30.23	1.9509	4 26 58.3	12.030	11	15 12 7.91	2.1392	13 35 40.7	10.451
12	13 36 27.36	1.9535	4 38 59.8	12.019	12	15 14 16.42	2.1445	13 46 6.0	10.392
13	13 38 24.65	1.9561	4 51 0.6	12.007	13	15 16 25.25	2.1499	13 56 27.8	10.332
14	13 40 22.09	1.9587	5 3 0.7	11.996	14	15 18 34.41	2.1553	14 6 45.9	10.272
15	13 42 19.69	1.9614	5 15 0.1	11.982	15	15 20 43.89	2.1607	14 17 0.4	10.210
16	13 44 17.46	1.9642	5 26 58.6	11.968	16	15 22 53.70	2.1662	14 27 11.1	10.147
17	13 46 15.39	1.9670	5 38 56.3	11.953	17	15 25 3.84	2.1717	14 37 18.0	10.082
18	13 48 13.50	1.9699	5 50 53.0	11.937	18	15 27 14.31	2.1772	14 47 20.9	10.016
19	13 50 11.78	1.9728	6 2 48.7	11.920	19	15 29 25.11	2.1828	14 57 19.9	9.950
20	13 52 10.24	1.9758	6 14 43.4	11.902	20	15 31 36.25	2.1885	15 7 14.9	9.882
21	13 54 8.88	1.9789	6 26 37.0	11.884	21	15 33 47.73	2.1942	15 17 5.7	9.812
22	13 56 7.71	1.9821	6 38 29.5	11.865	22	15 35 59.55	2.1998	15 26 52.3	9.742
23	13 58 6.73	1.9852	S. 6 50 20.8	11.844	23	15 38 11.71	2.2056	S. 15 36 34.7	9.670
SATURDAY 22.					MONDAY 24.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	14 0 5.94	1.9885	S. 7 2 10.8	11.823	0	15 40 24.22	2.2114	S. 15 46 12.7	9.597
1	14 2 5.35	1.9918	7 13 59.5	11.801	1	15 42 37.08	2.2172	15 55 46.3	9.522
2	14 4 4.96	1.9952	7 25 46.9	11.777	2	15 44 50.29	2.2231	16 5 15.4	9.447
3	14 6 4.77	1.9986	7 37 32.8	11.753	3	15 47 3.85	2.2289	16 14 40.0	9.371
4	14 8 4.79	2.0021	7 49 17.3	11.728	4	15 49 17.76	2.2348	16 23 59.9	9.292
5	14 10 5.02	2.0057	8 1 0.2	11.702	5	15 51 32.03	2.2408	16 33 15.1	9.213
6	14 12 5.47	2.0093	8 12 41.5	11.675	6	15 53 46.66	2.2468	16 42 25.5	9.132
7	14 14 6.14	2.0130	8 24 21.2	11.647	7	15 56 1.65	2.2528	16 51 31.0	9.051
8	14 16 7.03	2.0167	8 35 59.2	11.619	8	15 58 17.00	2.2588	17 0 31.6	8.967
9	14 18 8.14	2.0205	8 47 35.5	11.589	9	16 0 32.71	2.2648	17 9 27.1	8.883
10	14 20 9.48	2.0243	8 59 9.9	11.558	10	16 2 48.78	2.2709	17 18 17.6	8.798
11	14 22 11.06	2.0282	9 10 42.5	11.527	11	16 5 5.22	2.2771	17 27 2.9	8.711
12	14 24 12.87	2.0322	9 22 13.1	11.493	12	16 7 22.03	2.2832	17 35 42.9	8.622
13	14 26 14.92	2.0362	9 33 41.7	11.460	13	16 9 39.20	2.2892	17 44 17.6	8.533
14	14 28 17.22	2.0404	9 45 8.3	11.425	14	16 11 56.74	2.2954	17 52 46.9	8.442
15	14 30 19.77	2.0446	9 56 32.7	11.389	15	16 14 14.65	2.3016	18 1 10.6	8.349
16	14 32 22.57	2.0487	10 7 55.0	11.352	16	16 16 32.93	2.3077	18 9 28.8	8.257
17	14 34 25.62	2.0530	10 19 15.0	11.315	17	16 18 51.58	2.3139	18 17 41.4	8.162
18	14 36 28.93	2.0573	10 30 32.8	11.277	18	16 21 10.60	2.3202	18 25 48.2	8.065
19	14 38 32.50	2.0617	10 41 48.2	11.236	19	16 23 30.00	2.3263	18 33 49.2	7.967
20	14 40 36.33	2.0662	10 53 1.1	11.195	20	16 25 49.76	2.3325	18 41 44.3	7.869
21	14 42 40.44	2.0707	11 4 11.6	11.153	21	16 28 9.90	2.3387	18 49 33.5	7.770
22	14 44 44.81	2.0752	11 15 19.5	11.110	22	16 30 30.41	2.3449	18 57 16.7	7.668
23	14 46 49.46	2.0798	11 26 24.8	11.066	23	16 32 51.29	2.3511	19 4 53.7	7.565
24	14 48 54.39	2.0845	S. 11 37 27.4	11.021	24	16 35 12.54	2.3573	S. 19 12 24.5	7.461

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 25.					THURSDAY 27.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	16 35 12.54	2.3573	S. 19 12 24.5	7.461	0	18 34 54.53	2.6068	S. 22 46 45.0	1.034
1	16 37 34.17	2.3635	19 19 49.0	7.356	1	18 37 31.04	2.6101	22 47 42.3	0.876
2	16 39 56.16	2.3697	19 27 7.2	7.249	2	18 40 7.74	2.6132	22 48 30.1	0.717
3	16 42 18.53	2.3759	19 34 18.9	7.141	3	18 42 44.63	2.6162	22 49 8.4	0.558
4	16 44 41.27	2.3821	19 41 24.1	7.032	4	18 45 21.69	2.6191	22 49 37.1	0.397
5	16 47 4.38	2.3882	19 48 22.7	6.922	5	18 47 58.92	2.6219	22 49 56.1	0.237
6	16 49 27.86	2.3943	19 55 14.7	6.810	6	18 50 36.32	2.6246	22 50 5.5	-0.076
7	16 51 51.70	2.4004	20 1 59.9	6.696	7	18 53 13.87	2.6271	22 50 5.2	+0.086
8	16 54 15.91	2.4066	20 8 38.2	6.582	8	18 55 51.57	2.6295	22 49 55.2	0.247
9	16 56 40.49	2.4127	20 15 9.6	6.466	9	18 58 29.41	2.6317	22 49 35.5	0.410
10	16 59 5.43	2.4187	20 21 34.1	6.349	10	19 1 7.38	2.6339	22 49 6.0	0.573
11	17 1 30.74	2.4247	20 27 51.5	6.230	11	19 3 45.48	2.6360	22 48 26.7	0.737
12	17 3 56.40	2.4307	20 34 1.7	6.110	12	19 6 23.70	2.6379	22 47 37.6	0.900
13	17 6 22.43	2.4367	20 40 4.7	5.989	13	19 9 2.03	2.6397	22 46 38.7	1.064
14	17 8 48.81	2.4426	20 46 0.4	5.867	14	19 11 40.46	2.6413	22 45 29.9	1.228
15	17 11 15.54	2.4485	20 51 48.7	5.743	15	19 14 18.99	2.6429	22 44 11.3	1.392
16	17 13 42.63	2.4544	20 57 29.6	5.619	16	19 16 57.61	2.6442	22 42 42.8	1.557
17	17 16 10.07	2.4602	21 3 3.0	5.492	17	19 19 36.30	2.6455	22 41 4.4	1.722
18	17 18 37.86	2.4660	21 8 28.7	5.365	18	19 22 15.07	2.6467	22 39 16.2	1.886
19	17 21 5.99	2.4717	21 13 46.8	5.237	19	19 24 53.90	2.6476	22 37 18.1	2.052
20	17 23 34.47	2.4774	21 18 57.1	5.107	20	19 27 32.78	2.6485	22 35 10.0	2.217
21	17 26 3.28	2.4830	21 23 59.6	4.976	21	19 30 11.72	2.6492	22 32 52.1	2.381
22	17 28 32.43	2.4886	21 28 54.2	4.844	22	19 32 50.69	2.6498	22 30 24.3	2.546
23	17 31 1.91	2.4941	S. 21 33 40.9	4.711	23	19 35 29.70	2.6504	S. 22 27 46.6	2.711
WEDNESDAY 26.					FRIDAY 28.				
0	17 33 31.72	2.4996	S. 21 38 19.5	4.576	0	19 38 8.74	2.6507	S. 22 24 59.0	2.876
1	17 36 1.86	2.5050	21 42 50.0	4.440	1	19 40 47.79	2.6509	22 22 1.5	3.040
2	17 38 32.32	2.5103	21 47 12.3	4.303	2	19 43 26.85	2.6510	22 18 54.2	3.204
3	17 41 3.10	2.5156	21 51 26.4	4.165	3	19 46 5.91	2.6509	22 15 37.0	3.369
4	17 43 34.19	2.5207	21 55 32.1	4.026	4	19 48 44.96	2.6507	22 12 9.9	3.533
5	17 46 5.59	2.5259	21 59 29.5	3.886	5	19 51 24.00	2.6504	22 8 33.0	3.697
6	17 48 37.30	2.5310	22 3 18.4	3.743	6	19 54 3.01	2.6500	22 4 46.3	3.860
7	17 51 9.31	2.5359	22 6 58.7	3.601	7	19 56 42.00	2.6495	22 0 49.8	4.023
8	17 53 41.61	2.5408	22 10 30.5	3.458	8	19 59 20.95	2.6487	21 56 43.5	4.186
9	17 56 14.21	2.5457	22 13 53.7	3.314	9	20 1 59.85	2.6479	21 52 27.5	4.347
10	17 58 47.09	2.5504	22 17 8.2	3.168	10	20 4 38.70	2.6470	21 48 1.8	4.509
11	18 1 20.26	2.5551	22 20 13.9	3.022	11	20 7 17.49	2.6460	21 43 26.4	4.671
12	18 3 53.70	2.5596	22 23 10.8	2.874	12	20 9 56.22	2.6448	21 38 41.3	4.832
13	18 6 27.41	2.5641	22 25 58.8	2.726	13	20 12 34.87	2.6434	21 33 46.6	4.992
14	18 9 1.39	2.5685	22 28 37.9	2.576	14	20 15 13.43	2.6420	21 28 42.3	5.151
15	18 11 35.63	2.5728	22 31 7.9	2.425	15	20 17 51.91	2.6405	21 23 28.5	5.309
16	18 14 10.13	2.5770	22 33 28.9	2.274	16	20 20 30.29	2.6387	21 18 5.2	5.467
17	18 16 44.87	2.5811	22 35 40.8	2.122	17	20 23 8.56	2.6370	21 12 32.4	5.625
18	18 19 19.86	2.5851	22 37 43.6	1.969	18	20 25 46.73	2.6352	21 6 50.2	5.782
19	18 21 55.08	2.5889	22 39 37.1	1.815	19	20 28 24.78	2.6331	21 0 58.6	5.937
20	18 24 30.53	2.5927	22 41 21.4	1.661	20	20 31 2.70	2.6309	20 54 57.7	6.092
21	18 27 6.21	2.5965	22 42 56.4	1.505	21	20 33 40.49	2.6287	20 48 47.5	6.247
22	18 29 42.11	2.6001	22 44 22.0	1.348	22	20 36 18.15	2.6265	20 42 28.1	6.400
23	18 32 18.22	2.6035	22 45 38.2	1.192	23	20 38 55.67	2.6240	20 35 59.5	6.552
24	18 34 54.53	2.6068	S. 22 46 45.0	1.034	24	20 41 33.03	2.6213	S. 20 29 21.8	6.704

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
-------	---------------------	------------------------	--------------	------------------------

SATURDAY 29.

	h	m	s	s	°	'	"	"
0	20	41	33.03	2.6213	S. 20	29	21.8	6.704
1	20	44	10.23	2.6187	20	22	35.0	6.854
2	20	46	47.27	2.6160	20	15	39.3	7.003
3	20	49	24.15	2.6132	20	8	34.6	7.152
4	20	52	0.85	2.6102	20	1	21.1	7.298
5	20	54	37.37	2.6072	19	53	58.8	7.445
6	20	57	13.71	2.6040	19	46	27.7	7.591
7	20	59	49.85	2.6007	19	38	47.9	7.734
8	21	2	25.80	2.5975	19	30	59.6	7.877
9	21	5	1.55	2.5941	19	23	2.7	8.018
10	21	7	37.09	2.5906	19	14	57.4	8.158
11	21	10	12.42	2.5871	19	6	43.7	8.297
12	21	12	47.54	2.5834	18	58	21.7	8.435
13	21	15	22.43	2.5797	18	49	51.5	8.572
14	21	17	57.10	2.5759	18	41	13.1	8.707
15	21	20	31.54	2.5721	18	32	26.7	8.839
16	21	23	5.75	2.5682	18	23	32.4	8.971
17	21	25	39.73	2.5642	18	14	30.2	9.102
18	21	28	13.46	2.5601	18	5	20.1	9.232
19	21	30	46.94	2.5560	17	56	2.3	9.359
20	21	33	20.18	2.5518	17	46	37.0	9.485
21	21	35	53.16	2.5476	17	37	4.1	9.611
22	21	38	25.89	2.5433	17	27	23.7	9.734
23	21	40	58.36	2.5390	S. 17	17	36.0	9.855

SUNDAY, MARCH 1.

0	21	43	30.57	2.5346	S. 17	7	41.1	9.975
---	----	----	-------	--------	-------	---	------	-------

PHASES OF THE MOON.

●	New Moon		Feb.	d	h	m
☾	First Quarter			8	16	27.5
○	Full Moon			16	21	5.4
☾	Last Quarter			24	15	24.3

☾	Perigee		Feb.	d	h
☾	Apogee			14	15.1

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	III ^h	P. L. of Diff.	VI ^h	P. L. of Diff.	IX ^h	P. L. of Diff.
4	SUN	W. 30 28 27	2431	32 11 17	2446	33 53 46	2461	35 35 54	2476
	Aldebaran	E. 83 39 25	2112	81 48 44	2126	79 58 25	2141	78 8 29	2157
5	SUN	W. 44 0 51	2564	45 40 36	2582	47 19 56	2601	48 58 50	2621
	Aldebaran	E. 69 4 56	2241	67 17 30	2259	65 30 30	2277	63 43 57	2296
	Pollux	E. 113 14 24	2264	111 27 31	2281	109 41 4	2298	107 55 2	2316
6	SUN	W. 57 6 40	2720	58 42 53	2740	60 18 39	2760	61 53 59	2781
	SATURN	W. 18 28 22	2461	20 10 30	2478	21 52 14	2494	23 33 35	2509
	Aldebaran	E. 54 58 1	2391	53 14 13	2410	51 30 52	2429	49 47 58	2448
	Pollux	E. 99 11 26	2408	97 28 3	2426	95 45 6	2445	94 2 36	2465
	JUPITER	E. 114 17 18	2345	112 32 24	2364	110 47 57	2383	109 3 58	2402
7	SUN	W. 69 43 58	2883	71 16 39	2903	72 48 54	2923	74 20 44	2942
	α Pegasi	W. 42 5 3	3525	43 25 0	3486	44 45 40	3451	46 6 59	3421
	SATURN	W. 31 55 10	2589	33 34 20	2606	35 13 7	2623	36 51 31	2640
	Aldebaran	E. 41 20 20	2545	39 40 10	2564	38 0 26	2583	36 21 9	2602
	Pollux	E. 85 36 46	2559	83 56 55	2578	82 17 30	2596	80 38 29	2615
	JUPITER	E. 100 30 43	2495	98 49 23	2514	97 8 29	2532	95 28 0	2550
	Regulus	E. 121 28 50	2545	119 48 39	2563	118 8 53	2582	116 29 33	2600
8	SUN	W. 81 53 49	3037	83 23 16	3055	84 52 19	3073	86 21 1	3091
	α Pegasi	W. 53 0 28	3332	54 24 3	3323	55 47 48	3316	57 11 41	3310
	SATURN	W. 44 57 40	2725	46 33 46	2742	48 9 30	2758	49 44 53	2773
	MARS	W. 20 55 58	3064	22 24 52	3065	23 53 45	3068	25 22 34	3073
	Aldebaran	E. 28 11 9	2698	26 34 26	2717	24 58 8	2736	23 22 16	2755
	Pollux	E. 72 29 40	2704	70 53 6	2721	69 16 55	2738	67 41 6	2755
	JUPITER	E. 87 11 42	2637	85 33 37	2654	83 55 55	2670	82 18 35	2686
	Regulus	E. 108 18 52	2687	106 41 54	2703	105 5 18	2719	103 29 3	2735
9	SUN	W. 93 39 18	3174	95 5 58	3189	96 32 20	3204	97 58 24	3219
	α Pegasi	W. 64 12 8	3304	65 36 15	3306	67 0 19	3309	68 24 21	3312
	SATURN	W. 57 36 44	2849	59 10 8	2863	60 43 14	2876	62 16 3	2890
	MARS	W. 32 44 32	3116	34 12 22	3127	35 39 59	3137	37 7 24	3148
	Pollux	E. 59 47 28	2835	58 13 46	2850	56 40 24	2865	55 7 21	2880
	JUPITER	E. 74 17 7	2761	72 41 49	2775	71 6 49	2789	69 32 7	2802
	Regulus	E. 95 33 2	2811	93 58 48	2825	92 24 53	2838	90 51 15	2852
10	SUN	W. 105 4 32	3287	106 28 59	3299	107 53 12	3310	109 17 12	3322
	α Pegasi	W. 75 23 22	3335	76 46 53	3340	78 10 18	3346	79 33 36	3352
	SATURN	W. 69 56 0	2951	71 27 14	2962	72 58 13	2973	74 29 0	2983
	MARS	W. 44 21 19	3199	45 47 29	3209	47 13 27	3219	48 39 14	3228
	α Arietis	W. 31 50 45	3460	33 11 54	3427	34 33 40	3400	35 55 57	3377
	Pollux	E. 47 26 43	2950	45 55 28	2963	44 24 29	2977	42 53 47	2990
	JUPITER	E. 61 42 47	2863	60 9 41	2874	58 36 50	2884	57 4 12	2894
	Regulus	E. 83 7 16	2913	81 35 15	2924	80 3 27	2935	78 31 52	2945
11	SUN	W. 116 14 2	3372	117 36 50	3381	118 59 28	3389	120 21 57	3397
	α Pegasi	W. 86 28 17	3356	87 50 49	3393	89 13 14	3400	90 35 31	3407
	SATURN	W. 81 59 51	3029	83 29 28	3037	84 58 55	3044	86 28 13	3051
	MARS	W. 55 45 30	3270	57 10 16	3277	58 34 54	3284	59 59 23	3291
	α Arietis	W. 42 52 50	3303	44 16 58	3294	45 41 17	3296	47 5 45	3280

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
4	SUN W.	37 17 41	2493	38 59 4	2510	40 40 4	2527	42 20 40	2545
	Aldebaran E.	76 18 57	2173	74 29 49	2190	72 41 6	2206	70 52 48	2224
5	SUN W.	50 37 17	2640	52 15 18	2660	53 52 52	2680	55 29 59	2700
	Aldebaran E.	61 57 51	2315	60 12 13	2333	58 27 2	2352	56 42 18	2371
	Pollux E.	106 9 26	2334	104 24 16	2353	102 39 33	2371	100 55 16	2389
6	SUN W.	63 28 52	2801	65 3 18	2822	66 37 17	2842	68 10 50	2862
	SATURN W.	25 14 36	2523	26 55 18	2539	28 35 39	2555	30 15 36	2572
	Aldebaran E.	48 5 32	2467	46 23 33	2487	44 42 2	2506	43 0 58	2525
	Pollux E.	92 20 33	2484	90 38 57	2503	88 57 47	2522	87 17 4	2540
	JUPITER E.	107 20 26	2421	105 37 21	2439	103 54 42	2458	102 12 30	2476
7	SUN W.	75 52 10	2962	77 23 11	2981	78 53 47	3000	80 23 59	3018
	α Pegasi W.	47 28 53	3395	48 51 15	3374	50 14 1	3358	51 37 6	3344
	SATURN W.	38 29 31	2657	40 7 8	2675	41 44 21	2692	43 21 12	2709
	Aldebaran E.	34 42 17	2621	33 3 52	2640	31 25 52	2660	29 48 18	2679
	Pollux E.	78 59 54	2633	77 21 44	2651	75 43 59	2669	74 6 38	2687
	JUPITER E.	93 47 55	2568	92 8 16	2585	90 29 1	2603	88 50 10	2620
	Regulus E.	114 50 37	2618	113 12 6	2635	111 33 58	2652	109 56 13	2669
8	SUN W.	87 49 22	3108	89 17 21	3125	90 45 0	3142	92 12 19	3158
	α Pegasi W.	58 35 41	3306	59 59 45	3305	61 23 51	3304	62 47 59	3303
	SATURN W.	51 19 56	2789	52 54 38	2805	54 28 59	2820	56 3 1	2835
	MARS W.	26 51 17	3079	28 19 52	3087	29 48 17	3096	31 16 30	3106
	Aldebaran E.	21 46 49	2775	20 11 48	2796	18 37 15	2818	17 3 10	2841
	Pollux E.	66 5 39	2772	64 30 35	2788	62 55 52	2804	61 21 30	2820
	JUPITER E.	80 41 36	2702	79 4 59	2717	77 28 42	2732	75 52 45	2747
	Regulus E.	101 53 10	2751	100 17 38	2767	98 42 27	2782	97 7 35	2796
9	SUN W.	99 24 10	3233	100 49 39	3247	102 14 52	3260	103 39 50	3274
	α Pegasi W.	69 48 19	3315	71 12 13	3320	72 36 1	3325	73 59 44	3330
	SATURN W.	63 48 35	2903	65 20 50	2916	66 52 48	2928	68 24 31	2939
	MARS W.	38 34 36	3158	40 1 35	3168	41 28 22	3178	42 54 57	3189
	Pollux E.	53 34 37	2895	52 2 12	2909	50 30 5	2923	48 58 15	2937
	JUPITER E.	67 57 42	2815	66 23 34	2828	64 49 43	2840	63 16 7	2852
	Regulus E.	89 17 55	2865	87 44 51	2878	86 12 4	2890	84 39 32	2902
10	SUN W.	110 40 58	3333	112 4 31	3343	113 27 53	3353	114 51 3	3363
	α Pegasi W.	80 56 47	3358	82 19 51	3365	83 42 47	3372	85 5 36	3379
	SATURN W.	75 59 34	2993	77 29 55	3002	79 0 5	3011	80 30 3	3020
	MARS W.	50 4 50	3237	51 30 15	3246	52 55 30	3254	54 20 35	3262
	α Arietis W.	37 18 40	3357	38 41 46	3339	40 5 12	3325	41 28 54	3313
	Pollux E.	41 23 22	3003	39 53 13	3016	38 23 20	3030	36 53 44	3043
	JUPITER E.	55 31 46	2905	53 59 33	2915	52 27 33	2924	50 55 44	2932
	Regulus E.	77 0 31	2955	75 29 22	2965	73 58 26	2974	72 27 41	2982
11	SUN W.	121 44 16	3405	123 6 27	3412	124 28 29	3419	125 50 24	3426
	α Pegasi W.	91 57 40	3415	93 19 41	3423	94 41 32	3430	96 3 15	3437
	SATURN W.	87 57 23	3058	89 26 24	3065	90 55 17	3071	92 24 2	3076
	MARS W.	61 23 45	3298	62 47 59	3304	64 12 6	3310	65 36 6	3315
	α Arietis W.	48 30 20	3274	49 55 2	3269	51 19 50	3264	52 44 44	3260

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
11	Pollux E.	35 24 24	3056	33 55 20	3070	32 26 34	3084	30 58 5	3099
	JUPITER E.	49 24 6	2940	47 52 39	2948	46 21 21	2956	44 50 13	2963
	Regulus E.	70 57 6	2991	69 26 42	3000	67 56 29	3007	66 26 25	3014
12	α Pegasi W.	97 24 50	3445	98 46 16	3454	100 7 32	3462	101 28 39	3470
	SATURN W.	93 52 41	3081	95 21 13	3086	96 49 40	3091	98 18 1	3095
	MARS W.	67 0 0	3320	68 23 48	3325	69 47 31	3329	71 11 9	3333
	α Arietis W.	54 9 42	3257	55 34 43	3254	56 59 48	3252	58 24 56	3249
	Aldebaran W.	21 28 32	3064	22 57 26	3065	24 26 19	3067	25 55 9	3069
	JUPITER E.	37 16 39	2993	35 46 18	2998	34 16 3	3003	32 45 54	3008
	Regulus E.	58 58 8	3045	57 28 51	3050	55 59 40	3055	54 30 35	3060
	Spica E.	112 52 49	3075	111 24 9	3080	109 55 35	3084	108 27 6	3087
13	SATURN W.	105 38 33	3112	107 6 28	3114	108 34 21	3116	110 2 11	3118
	MARS W.	78 8 15	3349	79 31 30	3351	80 54 43	3352	82 17 54	3354
	α Arietis W.	65 31 15	3240	66 56 37	3238	68 22 1	3236	69 47 27	3235
	Aldebaran W.	33 18 45	3078	34 47 22	3079	36 15 57	3080	37 44 32	3081
	JUPITER E.	25 16 25	3026	23 46 44	3029	22 17 7	3031	20 47 33	3034
	Regulus E.	47 6 27	3078	45 37 50	3081	44 9 17	3083	42 40 47	3085
	Spica E.	101 5 33	3101	99 37 24	3102	98 9 17	3104	96 41 12	3105
14	MARS W.	89 13 27	3358	90 36 31	3358	91 59 36	3358	93 22 41	3358
	α Arietis W.	76 55 4	3227	78 20 41	3225	79 46 20	3224	81 12 1	3222
	Aldebaran W.	45 7 10	3082	46 35 41	3082	48 4 12	3081	49 32 45	3081
	Regulus E.	35 18 56	3095	33 50 40	3097	32 22 27	3099	30 54 16	3101
	Spica E.	89 21 5	3109	87 53 6	3109	86 25 7	3109	84 57 8	3109
15	MARS W.	100 18 17	3352	101 41 28	3351	103 4 41	3349	104 27 56	3347
	α Arietis W.	88 20 55	3214	89 46 48	3212	91 12 43	3210	92 38 40	3209
	Aldebaran W.	56 55 44	3074	58 24 25	3072	59 53 8	3070	61 21 54	3068
	Spica E.	77 37 4	3104	76 9 0	3103	74 40 54	3102	73 12 46	3101
	Antares E.	123 29 20	3122	122 1 37	3119	120 33 50	3115	119 5 59	3111
16	MARS W.	111 24 50	3335	112 48 21	3332	114 11 56	3329	115 35 34	3326
	α Arietis W.	99 48 56	3200	101 15 5	3198	102 41 16	3197	104 7 29	3196
	Aldebaran W.	68 46 28	3055	70 15 33	3052	71 44 42	3048	73 13 55	3045
	Pollux W.	25 6 47	3175	26 33 26	3160	28 0 24	3146	29 27 38	3133
	JUPITER W.	10 42 0	3031	12 11 34	3023	13 41 18	3017	15 11 10	3010
	Spica E.	65 51 40	3091	64 23 20	3089	62 54 57	3087	61 26 32	3085
	Antares E.	111 45 37	3093	110 17 19	3089	108 48 57	3085	107 20 29	3082
17	Aldebaran W.	80 41 5	3026	82 10 45	3022	83 40 31	3018	85 10 22	3013
	Pollux W.	36 47 9	3085	38 15 37	3077	39 44 15	3068	41 13 4	3060
	JUPITER W.	22 42 13	2986	24 12 43	2981	25 43 20	2976	27 14 2	2971
	Spica E.	54 3 46	3074	52 35 5	3072	51 6 22	3070	49 37 36	3069
	Antares E.	99 56 56	3060	98 27 58	3056	96 58 54	3052	95 29 44	3047
18	Aldebaran W.	92 41 4	2989	94 11 31	2984	95 42 4	2978	97 12 44	2973
	Pollux W.	48 39 22	3025	50 9 4	3018	51 38 54	3011	53 8 53	3004
	JUPITER W.	34 49 6	2917	36 20 26	2912	37 51 52	2936	39 23 25	2931
	Spica E.	42 13 17	3062	40 44 21	3061	39 15 24	3062	37 46 28	3064
	Antares E.	88 2 29	3022	86 32 44	3017	85 2 52	3012	83 32 54	3006

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
11	Pollux E.	29 29 53	3115	28 2 1	3132	26 34 30	3150	25 7 21	3169
	JUPITER E.	43 19 14	2970	41 48 24	2976	40 17 42	2982	38 47 7	2988
	Regulus E.	64 56 29	3021	63 26 42	3027	61 57 3	3033	60 27 32	3039
12	α Pegasi W.	102 49 37	3479	104 10 25	3488	105 31 2	3497	106 51 29	3506
	SATURN W.	99 46 16	3099	101 14 27	3103	102 42 32	3106	104 10 34	3109
	MARS W.	72 34 42	3337	73 58 10	3340	75 21 35	3343	76 44 57	3346
	α Arietis W.	59 50 7	3247	61 15 20	3245	62 40 36	3243	64 5 54	3241
	Aldebaran W.	27 23 57	3071	28 52 42	3073	30 21 25	3074	31 50 6	3076
	JUPITER E.	31 15 50	3012	29 45 52	3016	28 15 59	3019	26 46 10	3022
	Regulus E.	53 1 36	3064	51 32 42	3068	50 3 53	3071	48 35 8	3074
	Spica E.	106 58 40	3090	105 30 18	3093	104 2 0	3096	102 33 45	3098
13	SATURN W.	111 29 59	3119	112 57 45	3121	114 25 29	3122	115 53 12	3121
	MARS W.	83 41 3	3355	85 4 11	3356	86 27 17	3357	87 50 22	3358
	α Arietis W.	71 12 55	3234	72 38 24	3232	74 3 55	3230	75 29 28	3228
	Aldebaran W.	39 13 5	3082	40 41 37	3082	42 10 8	3082	43 38 39	3082
	JUPITER E.	19 18 2	3037	17 48 35	3040	16 19 12	3043	14 49 52	3045
	Regulus E.	41 12 19	3088	39 43 54	3090	38 15 33	3092	36 47 14	3093
	Spica E.	95 13 8	3106	93 45 6	3107	92 17 5	3108	90 49 5	3108
14	MARS W.	94 45 46	3357	96 8 52	3356	97 31 59	3355	98 55 7	3353
	α Arietis W.	82 37 44	3221	84 3 28	3219	85 29 15	3217	86 55 4	3215
	Aldebaran W.	51 1 18	3080	52 29 52	3079	53 58 28	3078	55 27 5	3076
	Regulus E.	29 26 7	3103	27 58 1	3105	26 29 57	3107	25 1 57	3110
	Spica E.	83 29 9	3108	82 1 9	3107	80 33 9	3106	79 5 7	3105
15	MARS W.	105 51 14	3345	107 14 34	3343	108 37 56	3340	110 1 21	3337
	α Arietis W.	94 4 39	3207	95 30 40	3205	96 56 43	3203	98 22 49	3202
	Aldebaran W.	62 50 43	3066	64 19 35	3063	65 48 29	3060	67 17 27	3058
	Spica E.	71 44 37	3099	70 16 26	3097	68 48 13	3095	67 19 58	3093
	Antares E.	117 38 3	3108	116 10 3	3105	114 41 59	3101	113 13 50	3097
16	MARS W.	116 59 15	3323	118 23 0	3319	119 46 49	3316	121 10 42	3313
	α Arietis W.	105 33 43	3191	106 59 59	3194	108 26 15	3193	109 52 33	3191
	Aldebaran W.	74 43 12	3042	76 12 33	3038	77 41 59	3034	79 11 30	3030
	Pollux W.	30 55 7	3122	32 22 50	3112	33 50 45	3103	35 18 52	3094
	JUPITER W.	16 41 10	3005	18 11 17	3000	19 41 30	2995	21 11 49	2991
	Spica E.	59 58 4	3083	58 29 33	3081	57 1 0	3079	55 32 24	3077
	Antares E.	105 51 57	3078	104 23 20	3073	102 54 37	3069	101 25 49	3065
17	Aldebaran W.	86 40 19	3009	88 10 21	3004	89 40 29	2999	91 10 43	2994
	Pollux W.	42 42 2	3053	44 11 9	3046	45 40 24	3039	47 9 49	3032
	JUPITER W.	28 44 51	2967	30 15 45	2962	31 46 46	2957	33 17 53	2952
	Spica E.	48 8 48	3067	46 39 58	3065	45 11 6	3064	43 42 12	3063
	Antares E.	94 0 29	3042	92 31 8	3037	91 1 41	3032	89 32 8	3027
18	Aldebaran W.	98 43 30	2968	100 14 23	2962	101 45 24	2956	103 16 32	2950
	Pollux W.	54 39 1	2997	56 9 17	2990	57 39 42	2983	59 10 16	2976
	JUPITER W.	40 55 5	2925	42 26 52	2919	43 58 46	2913	45 30 48	2907
	Spica E.	36 17 34	3065	34 48 42	3067	33 19 51	3070	31 51 4	3073
	Antares E.	82 2 49	3001	80 32 38	2996	79 2 20	2990	77 31 55	2985

GREENWICH MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.	
		° ' "		° ' "		° ' "		° ' "		
19	Aldebaran W.	104 47 47	2944	106 19 10	2938	107 50 41	2931	109 22 20	2925	
	Pollux W.	60 40 59	2969	62 11 50	2962	63 42 50	2955	65 13 59	2947	
	JUPITER W.	47 2 58	2901	48 35 15	2895	50 7 40	2889	51 40 13	2882	
	Regulus W.	24 44 34	2976	26 15 17	2966	27 46 12	2956	29 17 20	2947	
	Antares E.	76 1 23	2979	74 30 44	2974	72 59 59	2968	71 29 6	2962	
20	Pollux W.	72 52 6	2910	74 24 12	2902	75 56 29	2894	77 28 56	2886	
	JUPITER W.	59 25 8	2848	60 58 34	2840	62 32 9	2832	64 5 55	2825	
	Regulus W.	36 55 49	2903	38 28 4	2894	40 0 30	2885	41 33 7	2876	
	Antares E.	63 52 47	2931	62 21 8	2925	60 49 21	2919	59 17 26	2913	
21	Pollux W.	85 13 51	2842	86 47 24	2833	88 21 8	2824	89 55 5	2815	
	JUPITER W.	71 57 20	2783	73 32 9	2774	75 7 11	2765	76 42 25	2756	
	Regulus W.	49 19 7	2831	50 52 54	2821	52 26 54	2811	54 1 7	2802	
	Antares E.	51 35 52	2881	50 3 9	2875	48 30 18	2869	46 57 20	2863	
	SUN E.	133 31 39	3200	132 5 30	3190	130 39 9	3179	129 12 35	3168	
22	Pollux W.	97 47 58	2765	99 23 12	2754	100 58 40	2744	102 34 22	2733	
	JUPITER W.	84 41 42	2707	86 18 13	2696	87 54 58	2685	89 31 58	2674	
	Regulus W.	61 55 26	2750	63 30 59	2739	65 6 47	2728	66 42 49	2716	
	Antares E.	39 10 40	2838	37 37 2	2835	36 3 19	2833	34 29 32	2831	
	SUN E.	121 56 24	3111	120 28 28	3099	119 0 18	3087	117 31 53	3075	
23	Pollux W.	110 36 32	2676	112 13 44	2664	113 51 12	2652	115 28 56	2640	
	JUPITER W.	97 40 45	2616	99 19 18	2604	100 58 7	2592	102 37 13	2579	
	Regulus W.	74 46 54	2657	76 24 31	2645	78 2 25	2632	79 40 36	2619	
	Spica W.	21 44 10	2889	23 16 43	2848	24 50 8	2811	26 24 22	2778	
	SUN E.	110 5 57	3010	108 35 57	2997	107 5 41	2983	105 35 7	2969	
24	JUPITER W.	110 57 9	2514	112 38 3	2500	114 19 16	2487	116 0 48	2473	
	Regulus W.	87 55 59	2552	89 35 59	2538	91 16 19	2525	92 56 58	2511	
	Spica W.	34 25 15	2648	36 3 5	2626	37 41 24	2605	39 20 12	2585	
	SUN E.	97 57 49	2897	96 25 26	2882	94 52 45	2867	93 19 44	2852	
25	Regulus W.	101 25 8	2439	103 7 47	2425	104 50 46	2410	106 34 7	2396	
	Spica W.	47 40 50	2492	49 22 14	2475	51 4 3	2457	52 46 17	2440	
	SUN E.	85 29 41	2775	83 54 40	2759	82 19 18	2743	80 43 35	2728	
26	Spica W.	61 23 24	2357	63 8 0	2342	64 52 58	2326	66 38 19	2311	
	SUN E.	72 39 51	2649	71 2 3	2635	69 23 55	2620	67 45 27	2604	
27	Spica W.	75 30 30	2239	77 17 59	2226	79 5 48	2213	80 53 57	2200	
	Antares W.	29 57 19	2342	31 42 10	2319	33 27 41	2296	35 13 47	2274	
	SUN E.	59 28 5	2534	57 47 39	2521	56 6 55	2508	54 25 53	2496	
28	Spica W.	89 59 14	2144	91 49 8	2134	93 39 16	2124	95 29 38	2115	
	Antares W.	44 11 48	2184	46 0 40	2169	47 49 54	2155	49 39 29	2143	
	SUN E.	45 56 33	2441	44 13 56	2432	42 31 7	2424	40 48 6	2417	
29	Spica W.	104 44 32	2082	106 36 0	2077	108 27 35	2073	110 19 16	2069	
	Antares W.	58 51 37	2094	60 42 45	2087	62 34 4	2081	64 25 33	2076	
	SUN E.	32 10 50	2394	30 27 7	2394	28 43 24	2394	26 59 40	2396	

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
19	Aldebaran W.	110 54 7	2919	112 26 2	2912	113 58 6	2905	115 30 19	2898
	Pollux W.	66 45 18	2940	68 16 46	2933	69 48 23	2925	71 20 10	2918
	JUPITER W.	53 12 55	2876	54 45 45	2869	56 18 44	2862	57 51 52	2855
	Regulus W.	30 48 39	2938	32 20 9	2929	33 51 51	2920	35 23 45	2912
	Antares E.	69 58 5	2956	68 26 57	2950	66 55 42	2944	65 24 19	2937
20	Pollux W.	79 1 33	2877	80 34 21	2869	82 7 20	2860	83 40 30	2851
	JUPITER W.	65 39 51	2817	67 13 57	2808	68 48 14	2800	70 22 42	2792
	Regulus W.	43 5 56	2868	44 38 56	2859	46 12 8	2850	47 45 32	2841
	Antares E.	57 45 23	2907	56 13 13	2900	54 40 54	2894	53 8 27	2887
21	Pollux W.	91 29 14	2805	93 3 36	2795	94 38 10	2785	96 12 57	2775
	JUPITER W.	78 17 51	2747	79 53 29	2737	81 29 20	2727	83 5 24	2717
	Regulus W.	55 35 32	2792	57 10 10	2782	58 45 2	2772	60 20 7	2761
	Antares E.	45 24 14	2857	43 51 0	2852	42 17 40	2847	40 44 13	2842
	SUN E.	127 45 47	3157	126 18 46	3146	124 51 33	3135	123 24 6	3123
22	Pollux W.	104 10 18	2722	105 46 29	2710	107 22 55	2699	108 59 36	2688
	JUPITER W.	91 9 13	2663	92 46 42	2652	94 24 27	2640	96 2 28	2628
	Regulus W.	68 19 7	2705	69 55 40	2693	71 32 28	2681	73 9 33	2669
	Antares E.	32 55 44	2830	31 21 55	2831	29 48 8	2834	28 14 26	2840
	SUN E.	116 3 13	3063	114 34 18	3050	113 5 7	3037	111 35 40	3024
23	Pollux W.	117 6 56	2628	118 45 12	2616	120 23 45	2603	122 2 35	2591
	JUPITER W.	104 16 37	2566	105 56 18	2553	107 36 17	2540	109 16 34	2527
	Regulus W.	81 19 5	2606	82 57 51	2593	84 36 55	2580	86 16 18	2566
	Spica W.	27 59 19	2747	29 34 56	2720	31 11 9	2695	32 47 56	2671
	SUN E.	104 4 15	2955	102 33 6	2941	101 1 39	2926	99 29 53	2912
24	JUPITER W.	117 42 40	2459	119 24 51	2445	121 7 22	2430	122 50 14	2416
	Regulus W.	94 37 56	2497	96 19 14	2482	98 0 52	2468	99 42 50	2454
	Spica W.	40 59 27	2566	42 39 8	2547	44 19 16	2528	45 59 50	2510
	SUN E.	91 46 23	2836	90 12 42	2821	88 38 42	2806	87 4 22	2790
25	Regulus W.	108 17 48	2381	110 1 50	2367	111 46 12	2352	113 30 56	2338
	Spica W.	54 28 55	2423	56 11 57	2407	57 55 22	2390	59 39 11	2373
	SUN E.	79 7 32	2712	77 31 8	2696	75 54 23	2681	74 17 17	2666
26	Spica W.	68 24 2	2296	70 10 7	2282	71 56 33	2267	73 43 21	2253
	SUN E.	66 6 38	2590	64 27 29	2575	62 48 0	2561	61 8 12	2548
27	Spica W.	82 42 25	2188	84 31 11	2176	86 20 15	2165	88 9 36	2154
	Antares W.	37 0 26	2253	38 47 36	2234	40 35 14	2216	42 23 18	2199
	SUN E.	52 44 33	2484	51 2 57	2472	49 21 4	2461	47 38 56	2451
28	Spica W.	97 20 14	2107	99 11 2	2100	101 2 2	2093	102 53 12	2087
	Antares W.	51 29 22	2132	53 19 32	2121	55 9 59	2111	57 0 41	2102
	SUN E.	39 4 55	2410	37 21 35	2404	35 38 6	2399	33 54 30	2396
29	Spica W.	112 11 3	2066	114 2 54	2065	115 54 47	2064	117 46 41	2064
	Antares W.	66 17 10	2071	68 8 54	2067	70 0 45	2064	71 52 41	2061
	SUN E.	25 16 0	2403	23 32 29	2412	21 49 12	2424	20 6 12	2438

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sideral Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		^h ^m ^s	^s	[°] ['] ["]	["]	['] ["]	^s	^m ^s	^s
SUN.	1	22 48 7.47	9.370	S. 7 37 20.7	+ 56.97	16 10.02	65.42	12 32.46	0.486
Mon.	2	22 51 52.09	9.349	7 14 30.1	57.22	16 9.78	65.35	12 20.57	0.506
Tues.	3	22 55 36.21	9.329	6 51 33.5	57.47	16 9.53	65.28	12 8.17	0.526
Wed.	4	22 59 19.87	9.309	6 28 31.0	+ 57.70	16 9.29	65.21	11 55.30	0.546
Thur.	5	23 3 3.06	9.290	6 5 23.2	57.92	16 9.04	65.14	11 41.98	0.565
Frid.	6	23 6 45.78	9.272	5 42 10.5	58.12	16 8.79	65.08	11 28.19	0.583
Sat.	7	23 10 28.08	9.254	5 18 53.1	+ 58.30	16 8.54	65.02	11 13.97	0.601
SUN.	8	23 14 9.96	9.237	4 55 31.6	58.47	16 8.29	64.96	10 59.34	0.618
Mon.	9	23 17 51.44	9.221	4 32 6.4	58.62	16 8.03	64.91	10 44.32	0.634
Tues.	10	23 21 32.56	9.206	4 8 37.8	+ 58.75	16 7.78	64.86	10 28.93	0.649
Wed.	11	23 25 13.32	9.191	3 45 6.3	58.87	16 7.52	64.81	10 13.17	0.664
Thur.	12	23 28 53.74	9.178	3 21 32.2	58.97	16 7.27	64.75	9 57.08	0.678
Frid.	13	23 32 33.84	9.165	2 57 55.9	+ 59.05	16 7.01	64.71	9 40.68	0.690
Sat.	14	23 36 13.66	9.153	2 34 17.6	59.13	16 6.75	64.67	9 23.99	0.701
SUN.	15	23 39 53.21	9.142	2 10 37.9	59.18	16 6.48	64.64	9 7.03	0.711
Mon.	16	23 43 32.52	9.133	1 46 57.1	+ 59.22	16 6.22	64.61	8 49.83	0.721
Tues.	17	23 47 11.60	9.125	1 23 15.5	59.24	16 5.95	64.58	8 32.42	0.730
Wed.	18	23 50 50.48	9.117	0 59 33.4	59.25	16 5.68	64.55	8 14.80	0.738
Thur.	19	23 54 29.20	9.110	0 35 51.3	+ 59.25	16 5.40	64.52	7 57.00	0.745
Frid.	20	23 58 7.77	9.104	S. 0 12 9.4	59.23	16 5.13	64.50	7 39.07	0.750
Sat.	21	0 1 46.20	9.099	N. 0 11 31.9	59.20	16 4.85	64.48	7 21.00	0.755
SUN.	22	0 5 24.54	9.096	0 35 12.2	+ 59.16	16 4.57	64.46	7 2.83	0.759
Mon.	23	0 9 2.80	9.094	0 58 51.3	59.10	16 4.29	64.45	6 44.58	0.762
Tues.	24	0 12 41.00	9.092	1 22 28.8	59.03	16 4.01	64.44	6 26.28	0.764
Wed.	25	0 16 19.17	9.091	1 46 4.3	+ 58.94	16 3.72	64.44	6 7.94	0.765
Thur.	26	0 19 57.32	9.090	2 9 37.5	58.84	16 3.43	64.44	5 49.59	0.765
Frid.	27	0 23 35.47	9.091	2 33 8.0	58.72	16 3.15	64.44	5 31.25	0.764
Sat.	28	0 27 13.64	9.092	2 56 35.5	+ 58.59	16 2.87	64.44	5 12.93	0.763
SUN.	29	0 30 51.86	9.094	3 19 59.8	58.44	16 2.59	64.44	4 54.65	0.761
Mon.	30	0 34 30.15	9.097	3 43 20.4	58.28	16 2.31	64.45	4 36.42	0.758
Tues.	31	0 38 8.50	9.100	4 6 36.8	58.10	16 2.03	64.46	4 18.27	0.754
Wed.	32	0 41 46.95	9.104	N. 4 29 48.8	+ 57.90	16 1.75	64.47	4 0.22	0.750

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.18 from the sideral time.
The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing; north declinations increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ' "	"	m s	s	h m s
<i>SUN.</i>	1	22 48 5.50	9.371	S. 7 37 32.6	+56.97	12 32.56	0.486	22 35 32.94
Mon.	2	22 51 50.16	9.350	7 14 41.9	57.23	12 20.67	0.506	22 39 29.49
Tues.	3	22 55 34.32	9.330	6 51 45.1	57.48	12 8.28	0.526	22 43 26.04
Wed.	4	22 59 18.01	9.310	6 28 42.4	+57.71	11 55.41	0.546	22 47 22.60
Thur.	5	23 3 1.24	9.291	6 5 34.4	57.93	11 42.09	0.565	22 51 19.15
Frid.	6	23 6 44.00	9.273	5 42 21.5	58.13	11 28.30	0.583	22 55 15.70
Sat.	7	23 10 26.34	9.255	5 19 4.0	+58.31	11 14.08	0.601	22 59 12.26
<i>SUN.</i>	8	23 14 8.26	9.238	4 55 42.3	58.48	10 59.45	0.618	23 3 8.81
Mon.	9	23 17 49.79	9.222	4 32 16.9	58.63	10 44.43	0.634	23 7 5.36
Tues.	10	23 21 30.95	9.207	4 8 48.1	+58.76	10 29.04	0.649	23 11 1.91
Wed.	11	23 25 11.75	9.192	3 45 16.3	58.88	10 13.28	0.664	23 14 58.47
Thur.	12	23 28 52.21	9.179	3 21 42.0	58.98	9 57.19	0.678	23 18 55.02
Frid.	13	23 32 32.36	9.167	2 58 5.4	+59.06	9 40.79	0.690	23 22 51.57
Sat.	14	23 36 12.22	9.156	2 34 26.9	59.14	9 24.10	0.701	23 26 48.12
<i>SUN.</i>	15	23 39 51.82	9.145	2 10 46.9	59.19	9 7.14	0.711	23 30 44.68
Mon.	16	23 43 31.17	9.135	1 47 5.8	+59.23	8 49.94	0.721	23 34 41.23
Tues.	17	23 47 10.30	9.126	1 23 23.9	59.25	8 32.52	0.730	23 38 37.78
Wed.	18	23 50 49.24	9.118	0 59 41.6	59.26	8 14.90	0.738	23 42 34.34
Thur.	19	23 54 27.99	9.112	0 35 59.2	+59.26	7 57.10	0.745	23 46 30.89
Frid.	20	23 58 6.60	9.106	S. 0 12 17.0	59.24	7 39.16	0.750	23 50 27.44
Sat.	21	0 1 45.08	9.101	N. 0 11 24.6	59.21	7 21.09	0.755	23 54 23.99
<i>SUN.</i>	22	0 5 23.46	9.098	0 35 5.2	+59.17	7 2.92	0.759	23 58 20.54
Mon.	23	0 9 1.77	9.096	0 58 44.6	59.11	6 44.67	0.762	0 2 17.10
Tues.	24	0 12 40.01	9.094	1 22 22.4	59.04	6 26.36	0.764	0 6 13.65
Wed.	25	0 16 18.22	9.092	1 45 58.2	+58.95	6 8.02	0.765	0 10 10.20
Thur.	26	0 19 56.42	9.092	2 9 31.7	58.85	5 49.66	0.765	0 14 6.76
Frid.	27	0 23 34.62	9.093	2 33 2.6	58.73	5 31.31	0.764	0 18 3.31
Sat.	28	0 27 12.85	9.094	2 56 30.6	+58.60	5 12.99	0.763	0 21 59.86
<i>SUN.</i>	29	0 30 51.12	9.096	3 19 55.1	58.45	4 54.71	0.761	0 25 56.41
Mon.	30	0 34 29.45	9.099	3 43 15.9	58.29	4 36.48	0.758	0 29 52.97
Tues.	31	0 38 7.85	9.102	4 6 32.6	58.11	4 18.33	0.754	0 33 49.52
Wed.	32	0 41 46.34	9.106	N. 4 29 44.9	+57.91	4 0.27	0.750	0 37 46.07

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing; north declinations, increasing.

Diff. for 1 Hour,
+9^s.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	61	340 31 38.9	31 46.7	150.52	— 0.17	9.996 1703	+ 45.6	h m s 1 24 13.23
2	62	341 31 50.5	31 58.3	150.45	0.25	9.996 2799	45.8	1 20 17.32
3	63	342 32 0.4	32 8.1	150.38	0.30	9.996 3900	45.9	1 16 21.41
4	64	343 32 8.4	32 16.0	150.30	— 0.34	9.996 5004	+ 46.1	1 12 25.51
5	65	344 32 14.4	32 21.9	150.21	0.34	9.996 6112	46.3	1 8 29.60
6	66	345 32 18.3	32 25.7	150.12	0.30	9.996 7225	46.5	1 4 33.69
7	67	346 32 20.1	32 27.4	150.03	— 0.25	9.996 8343	+ 46.7	1 0 37.78
8	68	347 32 19.8	32 27.0	149.94	0.17	9.996 9467	47.0	0 56 41.88
9	69	348 32 17.3	32 24.4	149.85	— 0.07	9.997 0598	47.3	0 52 45.97
10	70	349 32 12.5	32 19.5	149.76	+ 0.05	9.997 1737	+ 47.6	0 48 50.06
11	71	350 32 5.6	32 12.5	149.67	0.17	9.997 2885	48.0	0 44 54.16
12	72	351 31 56.5	32 3.3	149.58	0.31	9.997 4042	48.4	0 40 58.25
13	73	352 31 45.2	31 51.9	149.48	+ 0.43	9.997 5208	+ 48.8	0 37 2.34
14	74	353 31 31.7	31 38.3	149.39	0.55	9.997 6385	49.2	0 33 6.44
15	75	354 31 16.0	31 22.5	149.30	0.65	9.997 7573	49.7	0 29 10.53
16	76	355 30 58.2	31 4.7	149.21	+ 0.73	9.997 8770	+ 50.1	0 25 14.62
17	77	356 30 38.4	30 44.7	149.13	0.79	9.997 9979	50.6	0 21 18.72
18	78	357 30 16.5	30 22.7	149.04	0.83	9.998 1199	51.0	0 17 22.81
19	79	358 29 52.6	29 58.7	148.96	+ 0.83	9.998 2429	+ 51.5	0 13 26.90
20	80	359 29 26.8	29 32.8	148.88	0.82	9.998 3670	51.9	0 9 31.00
21	81	0 28 59.0	29 5.0	148.81	0.76	9.998 4919	52.3	0 5 35.09
22	82	1 28 29.5	28 35.3	148.73	+ 0.69	9.998 6178	+ 52.6	{ 0 1 30.18 23 53 47.37
23	83	2 27 58.1	28 3.8	148.66	0.59	9.998 7443	52.8	23 53 47.37
24	84	3 27 24.9	27 30.6	148.58	0.46	9.998 8714	53.0	23 49 51.46
25	85	4 26 50.0	26 55.6	148.51	+ 0.33	9.998 9989	+ 53.2	23 45 55.55
26	86	5 26 13.4	26 18.9	148.44	0.20	9.999 1266	53.2	23 41 59.65
27	87	6 25 35.1	25 40.5	148.37	+ 0.08	9.999 2544	53.1	23 38 3.74
28	88	7 24 55.0	25 0.3	148.29	— 0.03	9.999 3820	+ 53.0	23 34 7.83
29	89	8 24 13.0	24 18.3	148.21	0.12	9.999 5093	52.9	23 30 11.93
30	90	9 23 29.2	23 34.4	148.13	0.18	9.999 6362	52.7	23 26 16.02
31	91	10 22 43.5	22 48.6	148.05	0.23	9.999 7625	52.5	23 22 20.11
32	92	11 21 55.8	22 0.8	147.97	— 0.23	9.999 8881	+ 52.2	23 18 24.21
NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.								
								Diff. for 1 Hour, — 9 ^s .8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	16 38.5	16 37.9	60 58.5	+ 0.02	60 56.5	- 0.36	6	. .	28.1
2	16 36.1	16 33.1	60 49.9	- 0.73	60 39.0	1.09	0 3.6	2.34	29.1
3	16 29.0	16 23.9	60 23.9	1.42	60 5.1	1.70	0 58.4	2.22	0.7
4	16 17.9	16 11.2	59 43.2	- 1.93	59 18.7	- 2.12	1 50.5	2.12	1.7
5	16 4.1	15 56.5	58 52.3	2.25	58 24.7	2.32	2 40.6	2.06	2.7
6	15 48.8	15 41.2	57 56.6	2.34	57 28.5	2.31	3 29.7	2.03	3.7
7	15 33.7	15 26.6	57 1.0	- 2.24	56 34.7	- 2.14	4 18.3	2.03	4.7
8	15 19.8	15 13.5	56 9.8	2.00	55 46.8	1.83	5 7.2	2.04	5.7
9	15 7.8	15 2.7	55 25.8	1.65	55 7.1	1.46	5 56.4	2.05	6.7
10	14 58.3	14 54.5	54 50.9	- 1.26	54 37.0	- 1.05	6 45.9	2.06	7.7
11	14 51.4	14 49.0	54 25.7	0.84	54 16.9	0.63	7 35.4	2.05	8.7
12	14 47.3	14 46.2	54 10.5	0.43	54 6.5	- 0.24	8 24.4	2.02	9.7
13	14 45.7	14 45.8	54 4.7	- 0.06	54 5.1	+ 0.11	9 12.4	1.98	10.7
14	14 46.4	14 47.5	54 7.4	+ 0.27	54 11.5	0.41	9 59.1	1.91	11.7
15	14 49.1	14 51.1	54 17.3	0.55	54 24.6	0.66	10 44.5	1.86	12.7
16	14 53.4	14 56.1	54 33.2	+ 0.76	54 43.0	+ 0.85	11 28.7	1.82	13.7
17	14 59.0	15 2.2	54 53.7	0.93	55 5.3	1.00	12 12.2	1.81	14.7
18	15 5.6	15 9.1	55 17.7	1.06	55 30.7	1.11	12 55.5	1.81	15.7
19	15 12.8	15 16.6	55 44.2	+ 1.15	55 58.2	+ 1.18	13 39.4	1.85	16.7
20	15 20.5	15 24.5	56 12.5	1.21	56 27.3	1.24	14 24.8	1.92	17.7
21	15 28.6	15 32.8	56 42.3	1.27	56 57.7	1.29	15 12.3	2.04	18.7
22	15 37.1	15 41.4	57 13.3	+ 1.31	57 29.2	+ 1.33	16 2.8	2.17	19.7
23	15 45.8	15 50.2	57 45.2	1.35	58 1.4	1.35	16 56.6	2.31	20.7
24	15 54.6	15 59.0	58 17.6	1.35	58 33.6	1.33	17 53.6	2.43	21.7
25	16 3.3	16 7.4	58 49.4	+ 1.29	59 4.6	+ 1.23	18 52.8	2.50	22.7
26	16 11.3	16 15.0	59 19.0	1.15	59 32.3	1.04	19 52.7	2.50	23.7
27	16 18.3	16 20.9	59 44.0	0.90	59 54.0	0.74	20 51.9	2.43	24.7
28	16 23.0	16 24.3	60 1.7	+ 0.53	60 6.8	+ 0.31	21 49.0	2.33	25.7
29	16 25.0	16 24.8	60 9.1	+ 0.06	60 8.3	- 0.20	22 43.7	2.22	26.7
30	16 23.7	16 21.7	60 4.2	- 0.48	59 56.8	0.76	23 36.2	2.15	27.7
31	16 18.7	16 14.9	59 46.0	1.03	59 32.2	1.28	6	. .	28.7
32	16 10.4	16 5.1	59 15.5	- 1.50	58 56.3	- 1.69	0 27.0	2.10	0.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 1.					TUESDAY 3.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	21 43 30.57	2.5346	S. 17 7 41.1	9.975	0	23 39 44.41	2.3100	S. 7 23 25.9	13.677
1	21 46 2.51	2.5302	16 57 39.0	10.093	1	23 42 2.88	2.3057	7 9 44.3	13.710
2	21 48 34.19	2.5257	16 47 29.9	10.210	2	23 44 21.10	2.3015	6 56 0.7	13.742
3	21 51 5.59	2.5212	16 37 13.8	10.326	3	23 46 39.06	2.2973	6 42 15.3	13.772
4	21 53 36.73	2.5167	16 26 50.8	10.439	4	23 48 56.78	2.2933	6 28 28.1	13.800
5	21 56 7.59	2.5120	16 16 21.1	10.551	5	23 51 14.26	2.2892	6 14 39.3	13.826
6	21 58 38.17	2.5074	16 5 44.7	10.661	6	23 53 31.49	2.2852	6 0 49.0	13.850
7	22 1 8.48	2.5027	15 55 1.8	10.769	7	23 55 48.48	2.2812	5 46 57.3	13.872
8	22 3 38.50	2.4981	15 44 12.4	10.877	8	23 58 5.23	2.2772	5 33 4.3	13.893
9	22 6 8.25	2.4934	15 33 16.6	10.982	9	0 0 21.74	2.2733	5 19 10.1	13.912
10	22 8 37.71	2.4886	15 22 14.6	11.085	10	0 2 38.03	2.2695	5 5 14.8	13.931
11	22 11 6.88	2.4838	15 11 6.4	11.187	11	0 4 54.08	2.2657	4 51 18.4	13.947
12	22 13 35.77	2.4791	14 59 52.2	11.286	12	0 7 9.91	2.2620	4 37 21.2	13.960
13	22 16 4.37	2.4743	14 48 32.1	11.384	13	0 9 25.52	2.2582	4 23 23.2	13.973
14	22 18 32.69	2.4695	14 37 6.1	11.481	14	0 11 40.90	2.2546	4 9 24.4	13.985
15	22 21 0.71	2.4647	14 25 34.4	11.576	15	0 13 56.07	2.2510	3 55 25.0	13.993
16	22 23 28.45	2.4598	14 13 57.0	11.669	16	0 16 11.02	2.2474	3 41 25.2	14.001
17	22 25 55.89	2.4550	14 2 14.1	11.759	17	0 18 25.76	2.2439	3 27 24.9	14.007
18	22 28 23.05	2.4502	13 50 25.9	11.847	18	0 20 40.29	2.2405	3 13 24.3	14.012
19	22 30 49.91	2.4452	13 38 32.4	11.936	19	0 22 54.62	2.2371	2 59 23.5	14.015
20	22 33 16.48	2.4404	13 26 33.6	12.022	20	0 25 8.74	2.2337	2 45 22.5	14.017
21	22 35 42.76	2.4356	13 14 29.7	12.106	21	0 27 22.67	2.2305	2 31 21.4	14.017
22	22 38 8.75	2.4307	13 2 20.9	12.187	22	0 29 36.40	2.2272	2 17 20.4	14.015
23	22 40 34.45	2.4258	S. 12 50 7.2	12.267	23	0 31 49.93	2.2239	S. 2 3 19.6	14.012
MONDAY 2.					WEDNESDAY 4.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	22 42 59.85	2.4209	S. 12 37 48.8	12.346	0	0 34 3.27	2.2208	S. 1 49 19.0	14.007
1	22 45 24.96	2.4161	12 25 25.7	12.422	1	0 36 16.43	2.2177	1 35 18.7	14.002
2	22 47 49.78	2.4112	12 12 58.1	12.497	2	0 38 29.40	2.2147	1 21 18.8	13.994
3	22 50 14.31	2.4064	12 0 26.1	12.570	3	0 40 42.19	2.2117	1 7 19.4	13.985
4	22 52 38.55	2.4016	11 47 49.7	12.641	4	0 42 54.80	2.2087	0 53 20.6	13.974
5	22 55 2.50	2.3968	11 35 9.2	12.710	5	0 45 7.24	2.2058	0 39 22.5	13.968
6	22 57 26.17	2.3920	11 22 24.5	12.777	6	0 47 19.50	2.2030	0 25 25.2	13.948
7	22 59 49.54	2.3872	11 9 35.9	12.842	7	0 49 31.60	2.2003	S. 0 11 28.7	13.934
8	23 2 12.63	2.3825	10 56 43.4	12.907	8	0 51 43.54	2.1976	N. 0 2 26.9	13.918
9	23 4 35.44	2.3778	10 43 47.1	12.968	9	0 53 55.31	2.1949	0 16 21.5	13.900
10	23 6 57.97	2.3731	10 30 47.2	13.028	10	0 56 6.93	2.1923	0 30 14.9	13.881
11	23 9 20.21	2.3683	10 17 43.7	13.087	11	0 58 18.39	2.1897	0 44 7.2	13.861
12	23 11 42.17	2.3637	10 4 36.8	13.143	12	1 0 29.70	2.1872	0 57 58.2	13.839
13	23 14 3.85	2.3590	9 51 26.6	13.197	13	1 2 40.86	2.1848	1 11 47.9	13.816
14	23 16 25.25	2.3544	9 38 13.2	13.249	14	1 4 51.88	2.1824	1 25 36.1	13.791
15	23 18 46.38	2.3499	9 24 56.7	13.301	15	1 7 2.75	2.1801	1 39 22.8	13.765
16	23 21 7.24	2.3453	9 11 37.1	13.350	16	1 9 13.49	2.1778	1 53 7.9	13.738
17	23 23 27.82	2.3407	8 58 14.7	13.397	17	1 11 24.09	2.1755	2 6 51.4	13.711
18	23 25 48.13	2.3362	8 44 49.5	13.442	18	1 13 34.55	2.1733	2 20 33.2	13.681
19	23 28 8.17	2.3317	8 31 21.6	13.486	19	1 15 44.89	2.1712	2 34 13.1	13.649
20	23 30 27.94	2.3273	8 17 51.2	13.527	20	1 17 55.10	2.1692	2 47 51.1	13.617
21	23 32 47.45	2.3230	8 4 18.3	13.568	21	1 20 5.20	2.1672	3 1 27.2	13.584
22	23 35 6.70	2.3186	7 50 43.0	13.607	22	1 22 15.17	2.1652	3 15 1.2	13.549
23	23 37 25.68	2.3142	7 37 5.5	13.642	23	1 24 25.02	2.1632	3 28 33.1	13.514
24	23 39 44.41	2.3100	S. 7 23 25.9	13.677	24	1 26 34.76	2.1614	N. 3 42 2.9	13.477

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 5.					SATURDAY 7.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	1 26 34.76	2.1614	N. 3 42 2.9	13.477	0	3 9 5.61	2.1262	N. 13 26 25.1	10.523
1	1 28 44.39	2.1596	3 55 30.4	13.439	1	3 11 13.18	2.1263	13 36 54.1	10.442
2	1 30 53.91	2.1578	4 8 55.6	13.399	2	3 13 20.77	2.1266	13 47 18.2	10.360
3	1 33 3.33	2.1562	4 22 18.3	13.358	3	3 15 28.37	2.1268	13 57 37.3	10.277
4	1 35 12.65	2.1545	4 35 38.6	13.317	4	3 17 35.99	2.1271	14 7 51.4	10.193
5	1 37 21.87	2.1529	4 48 56.4	13.274	5	3 19 43.62	2.1273	14 18 0.5	10.109
6	1 39 31.00	2.1513	5 2 11.5	13.230	6	3 21 51.27	2.1277	14 28 4.5	10.024
7	1 41 40.03	2.1498	5 15 24.0	13.186	7	3 23 58.94	2.1280	14 38 3.4	9.939
8	1 43 48.98	2.1484	5 28 33.8	13.139	8	3 26 6.63	2.1283	14 47 57.2	9.853
9	1 45 57.84	2.1469	5 41 40.7	13.092	9	3 28 14.34	2.1287	14 57 45.8	9.767
10	1 48 6.61	2.1456	5 54 44.8	13.044	10	3 30 22.07	2.1291	15 7 29.2	9.680
11	1 50 15.31	2.1443	6 7 46.0	12.994	11	3 32 29.83	2.1295	15 17 7.4	9.592
12	1 52 23.93	2.1431	6 20 44.1	12.943	12	3 34 37.61	2.1299	15 26 40.2	9.502
13	1 54 32.48	2.1418	6 33 39.2	12.892	13	3 36 45.42	2.1304	15 36 7.7	9.414
14	1 56 40.95	2.1407	6 46 31.2	12.840	14	3 38 53.26	2.1308	15 45 29.9	9.326
15	1 58 49.36	2.1397	6 59 20.0	12.786	15	3 41 1.12	2.1313	15 54 46.8	9.236
16	2 0 57.71	2.1386	7 12 5.5	12.732	16	3 43 9.02	2.1319	16 3 58.2	9.144
17	2 3 5.99	2.1375	7 24 47.8	12.677	17	3 45 16.95	2.1324	16 13 4.1	9.053
18	2 5 14.21	2.1365	7 37 26.7	12.620	18	3 47 24.91	2.1329	16 22 4.6	8.962
19	2 7 22.37	2.1356	7 50 2.2	12.562	19	3 49 32.90	2.1334	16 30 59.6	8.870
20	2 9 30.48	2.1347	8 2 34.2	12.504	20	3 51 40.92	2.1340	16 39 49.0	8.777
21	2 11 38.54	2.1339	8 15 2.7	12.445	21	3 53 48.98	2.1346	16 48 32.9	8.684
22	2 13 46.55	2.1331	8 27 27.6	12.384	22	3 55 57.07	2.1351	16 57 11.1	8.590
23	2 15 54.51	2.1323	N. 8 39 48.8	12.322	23	3 58 5.19	2.1357	N. 17 5 43.7	8.497
FRIDAY 6.					SUNDAY 8.				
0	2 18 2.43	2.1317	N. 8 52 6.3	12.261	0	4 0 13.35	2.1363	N. 17 14 10.7	8.402
1	2 20 10.31	2.1310	9 4 20.1	12.198	1	4 2 21.55	2.1370	17 22 32.0	8.307
2	2 22 18.15	2.1303	9 16 30.1	12.134	2	4 4 29.79	2.1376	17 30 47.6	8.212
3	2 24 25.95	2.1297	9 28 36.2	12.069	3	4 6 38.06	2.1382	17 38 57.4	8.115
4	2 26 33.72	2.1292	9 40 38.4	12.003	4	4 8 46.37	2.1388	17 47 1.4	8.019
5	2 28 41.46	2.1287	9 52 36.6	11.937	5	4 10 54.72	2.1395	17 54 59.7	7.922
6	2 30 49.17	2.1283	10 4 30.8	11.870	6	4 13 3.11	2.1401	18 2 52.1	7.825
7	2 32 56.86	2.1279	10 16 21.0	11.802	7	4 15 11.53	2.1407	18 10 38.7	7.727
8	2 35 4.52	2.1275	10 28 7.0	11.732	8	4 17 20.00	2.1414	18 18 19.4	7.630
9	2 37 12.16	2.1272	10 39 48.8	11.662	9	4 19 28.50	2.1421	18 25 54.3	7.532
10	2 39 19.78	2.1268	10 51 26.5	11.592	10	4 21 37.05	2.1427	18 33 23.2	7.432
11	2 41 27.38	2.1266	11 2 59.9	11.520	11	4 23 45.63	2.1433	18 40 46.1	7.332
12	2 43 34.97	2.1264	11 14 28.9	11.447	12	4 25 54.25	2.1440	18 48 3.1	7.233
13	2 45 42.55	2.1262	11 25 53.6	11.375	13	4 28 2.91	2.1447	18 55 14.1	7.133
14	2 47 50.11	2.1260	11 37 13.9	11.302	14	4 30 11.61	2.1453	19 2 19.1	7.032
15	2 49 57.67	2.1259	11 48 29.8	11.227	15	4 32 20.35	2.1460	19 9 18.0	6.932
16	2 52 5.22	2.1257	11 59 41.2	11.152	16	4 34 29.13	2.1466	19 16 10.9	6.831
17	2 54 12.76	2.1257	12 10 48.1	11.076	17	4 36 37.94	2.1472	19 22 57.7	6.729
18	2 56 20.30	2.1257	12 21 50.3	10.998	18	4 38 46.80	2.1479	19 29 38.4	6.627
19	2 58 27.85	2.1257	12 32 47.9	10.922	19	4 40 55.69	2.1485	19 36 13.0	6.525
20	3 0 35.39	2.1257	12 43 40.9	10.843	20	4 43 4.62	2.1492	19 42 41.4	6.422
21	3 2 42.94	2.1258	12 54 29.1	10.764	21	4 45 13.59	2.1497	19 49 3.7	6.320
22	3 4 50.49	2.1258	13 5 12.6	10.685	22	4 47 22.59	2.1503	19 55 19.8	6.217
23	3 6 58.04	2.1260	13 15 51.3	10.604	23	4 49 31.63	2.1510	20 1 29.7	6.113
24	3 9 5.61	2.1262	N. 13 26 25.1	10.523	24	4 51 40.71	2.1516	N. 20 7 33.4	6.010

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 9.					WEDNESDAY 11.				
0	4 51 40.71	2.1516	N. 20 7 33.4	6.010	0	6 35 18.01	2.1566	N. 22 52 30.6	0.818
1	4 53 49.82	2.1522	20 13 30.9	5.906	1	6 37 27.39	2.1560	22 53 16.4	0.708
2	4 55 58.97	2.1527	20 19 22.1	5.801	2	6 39 36.73	2.1554	22 53 55.6	0.599
3	4 58 8.15	2.1533	20 25 7.0	5.696	3	6 41 46.04	2.1547	22 54 28.3	0.490
4	5 0 17.37	2.1538	20 30 45.6	5.592	4	6 43 55.30	2.1541	22 54 54.4	0.380
5	5 2 26.61	2.1543	20 36 18.0	5.487	5	6 46 4.53	2.1534	22 55 13.9	0.271
6	5 4 35.89	2.1549	20 41 44.0	5.381	6	6 48 13.71	2.1526	22 55 26.9	0.162
7	5 6 45.20	2.1554	20 47 3.7	5.275	7	6 50 22.84	2.1518	22 55 33.4	+ 0.053
8	5 8 54.54	2.1559	20 52 17.0	5.169	8	6 52 31.93	2.1511	22 55 33.3	- 0.056
9	5 11 3.91	2.1564	20 57 24.0	5.063	9	6 54 40.97	2.1502	22 55 26.7	0.164
10	5 13 13.31	2.1568	21 2 24.6	4.957	10	6 56 49.96	2.1493	22 55 13.6	0.272
11	5 15 22.73	2.1572	21 7 18.9	4.851	11	6 58 58.89	2.1484	22 54 54.0	0.381
12	5 17 32.18	2.1577	21 12 6.7	4.743	12	7 1 7.77	2.1475	22 54 27.9	0.489
13	5 19 41.65	2.1581	21 16 48.1	4.637	13	7 3 16.59	2.1465	22 53 55.3	0.597
14	5 21 51.15	2.1585	21 21 23.1	4.529	14	7 5 25.35	2.1455	22 53 16.2	0.706
15	5 24 0.67	2.1589	21 25 51.6	4.422	15	7 7 34.05	2.1445	22 52 30.6	0.813
16	5 26 10.22	2.1592	21 30 13.7	4.315	16	7 9 42.69	2.1435	22 51 38.6	0.921
17	5 28 19.78	2.1595	21 34 29.4	4.207	17	7 11 51.27	2.1423	22 50 40.1	1.028
18	5 30 29.36	2.1598	21 38 38.5	4.098	18	7 13 59.77	2.1412	22 49 35.2	1.136
19	5 32 38.96	2.1601	21 42 41.2	3.991	19	7 16 8.21	2.1401	22 48 23.8	1.242
20	5 34 48.57	2.1603	21 46 37.4	3.882	20	7 18 16.58	2.1388	22 47 6.1	1.349
21	5 36 58.20	2.1606	21 50 27.1	3.773	21	7 20 24.87	2.1376	22 45 41.9	1.457
22	5 39 7.84	2.1608	21 54 10.2	3.665	22	7 22 33.09	2.1364	22 44 11.3	1.563
23	5 41 17.50	2.1610	N. 21 57 46.9	3.557	23	7 24 41.24	2.1352	N. 22 42 34.3	1.669
TUESDAY 10.					THURSDAY 12.				
0	5 43 27.16	2.1611	N. 22 1 17.0	3.447	0	7 26 49.31	2.1338	N. 22 40 51.0	1.775
1	5 45 36.83	2.1613	22 4 40.6	3.339	1	7 28 57.30	2.1325	22 39 1.3	1.881
2	5 47 46.52	2.1615	22 7 57.7	3.230	2	7 31 5.21	2.1311	22 37 5.3	1.987
3	5 49 56.21	2.1615	22 11 8.2	3.121	3	7 33 13.03	2.1297	22 35 2.9	2.092
4	5 52 5.90	2.1615	22 14 12.2	3.012	4	7 35 20.77	2.1282	22 32 54.3	2.197
5	5 54 15.59	2.1616	22 17 9.6	2.902	5	7 37 28.42	2.1268	22 30 39.3	2.302
6	5 56 25.29	2.1616	22 20 0.4	2.792	6	7 39 35.99	2.1253	22 28 18.1	2.406
7	5 58 34.98	2.1616	22 22 44.7	2.683	7	7 41 43.46	2.1237	22 25 50.6	2.511
8	6 0 44.68	2.1616	22 25 22.4	2.574	8	7 43 50.84	2.1222	22 23 16.8	2.615
9	6 2 54.37	2.1614	22 27 53.6	2.464	9	7 45 58.13	2.1207	22 20 36.8	2.718
10	6 5 4.05	2.1612	22 30 18.1	2.354	10	7 48 5.32	2.1191	22 17 50.6	2.822
11	6 7 13.72	2.1612	22 32 36.1	2.245	11	7 50 12.42	2.1175	22 14 58.2	2.924
12	6 9 23.39	2.1611	22 34 47.5	2.135	12	7 52 19.42	2.1158	22 11 59.7	3.027
13	6 11 33.05	2.1608	22 36 52.3	2.025	13	7 54 26.32	2.1142	22 8 55.0	3.129
14	6 13 42.69	2.1606	22 38 50.5	1.916	14	7 56 33.12	2.1125	22 5 44.2	3.231
15	6 15 52.32	2.1603	22 40 42.2	1.806	15	7 58 39.82	2.1107	22 2 27.3	3.333
16	6 18 1.93	2.1601	22 42 27.2	1.696	16	8 0 46.41	2.1090	21 59 4.3	3.434
17	6 20 11.53	2.1597	22 44 5.7	1.587	17	8 2 52.90	2.1072	21 55 35.2	3.536
18	6 22 21.10	2.1593	22 45 37.6	1.477	18	8 4 59.28	2.1054	21 52 0.0	3.637
19	6 24 30.65	2.1590	22 47 2.9	1.367	19	8 7 5.55	2.1037	21 48 18.8	3.737
20	6 26 40.18	2.1586	22 48 21.6	1.257	20	8 9 11.72	2.1018	21 44 31.6	3.837
21	6 28 49.68	2.1581	22 49 33.7	1.147	21	8 11 17.77	2.0999	21 40 38.4	3.937
22	6 30 59.15	2.1577	22 50 39.3	1.037	22	8 13 23.71	2.0981	21 36 39.2	4.036
23	6 33 8.60	2.1572	22 51 38.2	0.927	23	8 15 29.54	2.0962	21 32 34.1	4.134
24	6 35 18.01	2.1566	N. 22 52 30.6	0.818	24	8 17 35.25	2.0942	N. 21 28 23.1	4.232

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 13.					SUNDAY 15.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	8 17 35.25	2.0942	N. 21 28 23.1	4.232	1	9 55 42.09	1.9928	N. 16 20 18.6	8.408
2	8 19 40.85	2.0923	21 24 6.2	4.331	2	9 57 41.60	1.9907	16 11 51.9	8.482
3	8 21 46.33	2.0904	21 19 43.4	4.429	3	9 59 40.98	1.9887	16 3 20.8	8.555
4	8 23 51.70	2.0884	21 15 14.7	4.527	4	10 1 40.24	1.9867	15 54 45.3	8.628
5	8 25 56.94	2.0864	21 10 40.2	4.623	5	10 3 39.39	1.9847	15 46 5.4	8.700
6	8 28 2.07	2.0845	21 5 59.9	4.719	6	10 5 38.41	1.9827	15 37 21.3	8.771
7	8 30 7.08	2.0825	21 1 13.9	4.815	7	10 7 37.32	1.9807	15 28 32.9	8.842
8	8 32 11.97	2.0804	20 56 22.1	4.912	8	10 9 36.10	1.9787	15 19 40.3	8.912
9	8 34 16.73	2.0783	20 51 24.5	5.007	9	10 11 34.77	1.9769	15 10 43.5	8.981
10	8 36 21.37	2.0763	20 46 21.3	5.101	10	10 13 33.33	1.9750	15 1 42.6	9.049
11	8 38 25.89	2.0742	20 41 12.4	5.196	11	10 15 31.77	1.9731	14 52 37.6	9.117
12	8 40 30.28	2.0722	20 35 57.8	5.290	12	10 17 30.10	1.9712	14 43 28.5	9.185
13	8 42 34.55	2.0701	20 30 37.6	5.383	13	10 19 28.32	1.9694	14 34 15.4	9.252
14	8 44 38.69	2.0679	20 25 11.8	5.476	14	10 21 26.43	1.9676	14 24 58.3	9.318
15	8 46 42.70	2.0658	20 19 40.5	5.568	15	10 23 24.43	1.9658	14 15 37.2	9.384
16	8 48 46.59	2.0637	20 14 3.6	5.660	16	10 25 22.33	1.9640	14 6 12.2	9.448
17	8 50 50.35	2.0616	20 8 21.3	5.752	17	10 27 20.11	1.9622	13 56 43.4	9.512
18	8 52 53.98	2.0595	20 2 33.4	5.843	18	10 29 17.79	1.9605	13 47 10.7	9.577
19	8 54 57.49	2.0573	19 56 40.1	5.933	19	10 31 15.37	1.9588	13 37 34.1	9.641
20	8 57 0.86	2.0551	19 50 41.4	6.024	20	10 33 12.85	1.9572	13 27 53.8	9.702
21	8 59 4.10	2.0530	19 44 37.2	6.114	21	10 35 10.23	1.9555	13 18 9.9	9.763
22	9 1 7.22	2.0508	19 38 27.7	6.203	22	10 37 7.51	1.9538	13 8 22.2	9.825
23	9 3 10.20	2.0487	19 32 12.9	6.291	23	10 39 4.69	1.9522	12 58 30.9	9.885
24	9 5 13.06	2.0465	N. 19 25 52.8	6.379			1.9506	N. 12 48 36.0	9.945
SATURDAY 14.					MONDAY 16.				
0	9 7 15.78	2.0442	N. 19 19 27.4	6.467	0	10 42 58.76	1.9491	N. 12 38 37.5	10.004
1	9 9 18.37	2.0421	19 12 56.7	6.554	1	10 44 55.66	1.9475	12 28 35.5	10.062
2	9 11 20.83	2.0399	19 6 20.9	6.641	2	10 46 52.46	1.9460	12 18 30.0	10.120
3	9 13 23.16	2.0377	18 59 39.8	6.727	3	10 48 49.18	1.9446	12 8 21.1	10.177
4	9 15 25.36	2.0355	18 52 53.6	6.812	4	10 50 45.81	1.9432	11 58 8.8	10.233
5	9 17 27.42	2.0333	18 46 2.3	6.897	5	10 52 42.36	1.9417	11 47 53.1	10.290
6	9 19 29.36	2.0312	18 39 5.9	6.982	6	10 54 38.82	1.9403	11 37 34.0	10.345
7	9 21 31.17	2.0290	18 32 4.4	7.066	7	10 56 35.20	1.9390	11 27 11.7	10.398
8	9 23 32.84	2.0268	18 24 58.0	7.149	8	10 58 31.50	1.9377	11 16 46.2	10.452
9	9 25 34.39	2.0247	18 17 46.5	7.232	9	11 0 27.72	1.9364	11 6 17.5	10.505
10	9 27 35.80	2.0225	18 10 30.1	7.315	10	11 2 23.87	1.9352	10 55 45.6	10.557
11	9 29 37.09	2.0203	18 3 8.7	7.397	11	11 4 19.94	1.9339	10 45 10.6	10.609
12	9 31 38.24	2.0181	17 55 42.5	7.477	12	11 6 15.94	1.9327	10 34 32.5	10.660
13	9 33 39.26	2.0160	17 48 11.4	7.558	13	11 8 11.87	1.9316	10 23 51.4	10.709
14	9 35 40.16	2.0138	17 40 35.5	7.638	14	11 10 7.73	1.9304	10 13 7.4	10.758
15	9 37 40.92	2.0117	17 32 54.8	7.718	15	11 12 3.52	1.9293	10 2 20.4	10.807
16	9 39 41.56	2.0096	17 25 9.3	7.797	16	11 13 59.25	1.9283	9 51 30.5	10.856
17	9 41 42.07	2.0074	17 17 19.2	7.875	17	11 15 54.92	1.9273	9 40 37.7	10.903
18	9 43 42.45	2.0052	17 9 24.3	7.953	18	11 17 50.53	1.9263	9 29 42.1	10.950
19	9 45 42.70	2.0032	17 1 24.8	8.031	19	11 19 46.08	1.9254	9 18 43.7	10.996
20	9 47 42.83	2.0011	16 53 20.6	8.107	20	11 21 41.58	1.9245	9 7 42.6	11.041
21	9 49 42.83	1.9990	16 45 11.9	8.183	21	11 23 37.02	1.9237	8 56 38.8	11.085
22	9 51 42.71	1.9969	16 36 58.6	8.258	22	11 25 32.42	1.9228	8 45 32.4	11.128
23	9 53 42.46	1.9948	16 28 40.9	8.333	23	11 27 27.76	1.9220	8 34 23.4	11.172
24	9 55 42.09	1.9928	N. 16 20 18.6	8.408	24	11 29 23.06	1.9213	N. 8 23 11.8	11.214

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 17.					THURSDAY 19.				
0	11 29 23.06	1.9213	N. 8 23 11.8	11.214	0	13 1 33.75	1.9374	S. 1 9 11.7	12.328
1	11 31 18.32	1.9206	8 11 57.7	11.255	1	13 3 30.94	1.9390	1 21 31.5	12.331
2	11 33 13.53	1.9198	8 0 41.2	11.296	2	13 5 26.43	1.9406	1 33 51.4	12.332
3	11 35 8.70	1.9192	7 49 22.2	11.337	3	13 7 22.91	1.9422	1 46 11.4	12.333
4	11 37 3.84	1.9187	7 38 0.8	11.376	4	13 9 19.50	1.9440	1 58 31.4	12.333
5	11 38 58.94	1.9181	7 26 37.1	11.414	5	13 11 16.19	1.9457	2 10 51.4	12.333
6	11 40 54.01	1.9177	7 15 11.1	11.452	6	13 13 12.98	1.9474	2 23 11.4	12.332
7	11 42 49.06	1.9172	7 3 42.9	11.489	7	13 15 9.88	1.9493	2 35 31.2	12.329
8	11 44 44.07	1.9167	6 52 12.4	11.526	8	13 17 6.90	1.9512	2 47 50.9	12.326
9	11 46 39.06	1.9164	6 40 39.8	11.561	9	13 19 4.03	1.9532	3 0 10.3	12.322
10	11 48 34.04	1.9161	6 29 5.1	11.595	10	13 21 1.29	1.9552	3 12 29.5	12.317
11	11 50 28.99	1.9157	6 17 28.4	11.629	11	13 22 58.66	1.9572	3 24 48.3	12.310
12	11 52 23.92	1.9154	6 5 49.6	11.662	12	13 24 56.16	1.9594	3 37 6.7	12.303
13	11 54 18.84	1.9152	5 54 8.9	11.695	13	13 26 53.79	1.9616	3 49 24.7	12.296
14	11 56 13.75	1.9151	5 42 26.2	11.727	14	13 28 51.55	1.9637	4 1 42.2	12.287
15	11 58 8.65	1.9149	5 30 41.6	11.758	15	13 30 49.44	1.9660	4 13 59.1	12.277
16	12 0 3.54	1.9148	5 18 55.2	11.788	16	13 32 47.47	1.9683	4 26 15.3	12.265
17	12 1 58.43	1.9148	5 7 7.0	11.817	17	13 34 45.64	1.9707	4 38 30.9	12.254
18	12 3 53.32	1.9148	4 55 17.1	11.846	18	13 36 43.96	1.9732	4 50 45.8	12.242
19	12 5 48.21	1.9149	4 43 25.5	11.874	19	13 38 42.43	1.9757	5 2 59.9	12.228
20	12 7 43.11	1.9150	4 31 32.2	11.902	20	13 40 41.04	1.9782	5 15 13.2	12.213
21	12 9 38.01	1.9152	4 19 37.3	11.928	21	13 42 39.81	1.9808	5 27 25.5	12.197
22	12 11 32.93	1.9154	4 7 40.8	11.953	22	13 44 38.74	1.9835	5 39 36.9	12.181
23	12 13 27.86	1.9156	N. 3 55 42.9	11.977	23	13 46 37.83	1.9862	S. 5 51 47.2	12.163
WEDNESDAY 18.					FRIDAY 20.				
0	12 15 22.80	1.9158	N. 3 43 43.5	12.002	0	13 48 37.08	1.9889	S. 6 3 56.5	12.146
1	12 17 17.76	1.9162	3 31 42.7	12.024	1	13 50 36.50	1.9917	6 16 4.7	12.126
2	12 19 12.75	1.9167	3 19 40.6	12.047	2	13 52 36.08	1.9945	6 28 11.6	12.105
3	12 21 7.76	1.9170	3 7 37.1	12.069	3	13 54 35.84	1.9974	6 40 17.3	12.084
4	12 23 2.79	1.9174	2 55 32.3	12.089	4	13 56 35.77	2.0004	6 52 21.7	12.062
5	12 24 57.85	1.9180	2 43 26.4	12.108	5	13 58 35.89	2.0035	7 4 24.8	12.039
6	12 26 52.95	1.9187	2 31 19.3	12.128	6	14 0 36.19	2.0066	7 16 26.4	12.014
7	12 28 48.09	1.9192	2 19 11.0	12.147	7	14 2 36.67	2.0096	7 28 26.5	11.988
8	12 30 43.26	1.9198	2 7 1.7	12.163	8	14 4 37.34	2.0127	7 40 25.0	11.962
9	12 32 38.47	1.9206	1 54 51.4	12.180	9	14 6 38.20	2.0160	7 52 22.0	11.936
10	12 34 33.73	1.9214	1 42 40.1	12.196	10	14 8 39.26	2.0192	8 4 17.3	11.907
11	12 36 29.04	1.9222	1 30 27.9	12.211	11	14 10 40.51	2.0226	8 16 10.8	11.877
12	12 38 24.40	1.9231	1 18 14.8	12.225	12	14 12 41.97	2.0260	8 28 2.5	11.847
13	12 40 19.81	1.9240	1 6 0.9	12.238	13	14 14 43.63	2.0294	8 39 52.4	11.815
14	12 42 15.28	1.9250	0 53 46.2	12.251	14	14 16 45.50	2.0328	8 51 40.3	11.782
15	12 44 10.81	1.9260	0 41 30.8	12.262	15	14 18 47.57	2.0363	9 3 26.3	11.749
16	12 46 6.40	1.9271	0 29 14.8	12.272	16	14 20 49.86	2.0400	9 15 10.2	11.714
17	12 48 2.06	1.9282	0 16 58.1	12.283	17	14 22 52.37	2.0437	9 26 52.0	11.678
18	12 49 57.78	1.9293	N. 0 4 40.8	12.292	18	14 24 55.10	2.0473	9 38 31.6	11.642
19	12 51 53.58	1.9306	S. 0 7 37.0	12.300	19	14 26 58.05	2.0510	9 50 9.0	11.604
20	12 53 49.45	1.9318	0 19 55.2	12.307	20	14 29 1.22	2.0547	10 1 44.1	11.566
21	12 55 45.40	1.9332	0 32 13.8	12.313	21	14 31 4.62	2.0586	10 13 16.9	11.526
22	12 57 41.43	1.9346	0 44 32.8	12.319	22	14 33 8.25	2.0624	10 24 47.2	11.484
23	12 59 37.55	1.9360	0 56 52.1	12.324	23	14 35 12.11	2.0663	10 36 15.0	11.442
24	13 1 33.75	1.9374	S. 1 9 11.7	12.328	24	14 37 16.21	2.0703	S. 10 47 40.2	11.398

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 21.					MONDAY 23.				
0	h m s	s	S. 10 47 40.2	"	0	h m s	s	S. 18 43 36.5	"
1	14 37 16.21	2.0703	10 47 40.2	11.398	1	16 21 56.75	2.3018	18 43 36.5	7.982
2	14 39 20.55	2.0743	10 59 2.8	11.355	2	16 24 15.02	2.3071	18 51 32.5	7.882
3	14 41 25.13	2.0784	11 10 22.8	11.310	3	16 26 33.60	2.3128	18 59 22.4	7.781
4	14 43 29.96	2.0825	11 21 40.0	11.264	4	16 28 52.49	2.3175	19 7 6.2	7.678
5	14 45 35.03	2.0866	11 32 54.3	11.215	5	16 31 11.70	2.3228	19 14 43.8	7.575
6	14 47 40.35	2.0908	11 44 5.8	11.167	6	16 33 31.23	2.3281	19 22 15.2	7.470
7	14 49 45.93	2.0951	11 55 14.3	11.117	7	16 35 51.07	2.3332	19 29 40.2	7.364
8	14 51 51.76	2.0993	12 6 19.8	11.067	8	16 38 11.22	2.3384	19 36 58.9	7.257
9	14 53 57.85	2.1037	12 17 22.3	11.015	9	16 40 31.68	2.3437	19 44 11.1	7.148
10	14 56 4.20	2.1080	12 28 21.6	10.961	10	16 42 52.46	2.3488	19 51 16.7	7.039
11	14 58 10.81	2.1124	12 39 17.6	10.907	11	16 45 13.54	2.3540	19 58 15.8	6.929
12	15 0 17.69	2.1169	12 50 10.4	10.851	12	16 47 34.94	2.3592	20 5 8.2	6.817
13	15 2 24.84	2.1214	13 0 59.8	10.795	13	16 49 56.64	2.3642	20 11 53.8	6.703
14	15 4 32.26	2.1259	13 11 45.8	10.737	14	16 52 18.65	2.3694	20 18 32.6	6.589
15	15 6 39.95	2.1304	13 22 28.3	10.678	15	16 54 40.97	2.3744	20 25 4.5	6.474
16	15 8 47.91	2.1351	13 33 7.2	10.618	16	16 57 3.58	2.3794	20 31 29.5	6.358
17	15 10 56.16	2.1397	13 43 42.5	10.557	17	16 59 26.50	2.3845	20 37 47.5	6.241
18	15 13 4.68	2.1443	13 54 14.1	10.496	18	17 1 49.72	2.3895	20 43 58.4	6.122
19	15 15 13.48	2.1491	14 4 42.0	10.432	19	17 4 13.24	2.3945	20 50 2.1	6.002
20	15 17 22.57	2.1538	14 15 6.0	10.367	20	17 6 37.06	2.3993	20 55 58.6	5.882
21	15 19 31.94	2.1586	14 25 26.1	10.302	21	17 9 1.16	2.4042	21 1 47.9	5.760
22	15 21 41.60	2.1634	14 35 42.2	10.235	22	17 11 25.56	2.4091	21 7 29.8	5.637
23	15 23 51.55	2.1682	14 45 54.3	10.167	23	17 13 50.25	2.4138	21 13 4.3	5.513
24	15 26 1.79	2.1731	S. 14 56 2.3	10.098	24	17 16 15.22	2.4186	S. 21 18 31.4	5.388
SUNDAY 22.					TUESDAY 24.				
0	h m s	s	S. 15 6 6.1	"	0	h m s	s	S. 21 23 50.9	"
1	15 28 12.32	2.1780	15 6 6.1	10.027	1	17 18 40.48	2.4233	21 23 50.9	5.262
2	15 30 23.15	2.1829	15 16 5.6	9.956	2	17 21 6.02	2.4280	21 29 2.8	5.135
3	15 32 34.27	2.1879	15 26 0.8	9.883	3	17 23 31.84	2.4326	21 34 7.1	5.007
4	15 34 45.70	2.1929	15 35 51.6	9.810	4	17 25 57.93	2.4372	21 39 3.7	4.879
5	15 36 57.42	2.1979	15 45 38.0	9.735	5	17 28 24.30	2.4417	21 43 52.5	4.747
6	15 39 9.45	2.2030	15 55 19.8	9.658	6	17 30 50.93	2.4461	21 48 33.4	4.617
7	15 41 21.78	2.2080	16 4 57.0	9.581	7	17 33 17.83	2.4506	21 53 6.5	4.485
8	15 43 34.41	2.2131	16 14 29.5	9.502	8	17 35 45.00	2.4549	21 57 31.6	4.352
9	15 45 47.35	2.2182	16 23 57.3	9.422	9	17 38 12.42	2.4592	22 1 48.7	4.217
10	15 48 0.60	2.2233	16 33 20.2	9.342	10	17 40 40.10	2.4634	22 5 57.7	4.082
11	15 50 14.15	2.2285	16 42 38.3	9.260	11	17 43 8.03	2.4675	22 9 58.6	3.947
12	15 52 28.02	2.2337	16 51 51.4	9.176	12	17 45 36.20	2.4716	22 13 51.3	3.810
13	15 54 42.19	2.2388	17 0 59.4	9.091	13	17 48 4.62	2.4757	22 17 35.8	3.672
14	15 56 56.68	2.2441	17 10 2.3	9.006	14	17 50 33.28	2.4797	22 21 12.0	3.531
15	15 59 11.48	2.2492	17 19 0.1	8.919	15	17 53 2.18	2.4836	22 24 39.9	3.395
16	16 1 26.59	2.2544	17 27 52.6	8.830	16	17 55 31.31	2.4873	22 27 59.4	3.254
17	16 3 42.01	2.2597	17 36 39.7	8.740	17	17 58 0.66	2.4911	22 31 10.4	3.113
18	16 5 57.75	2.2650	17 45 21.4	8.650	18	18 0 30.24	2.4947	22 34 13.0	2.972
19	16 8 13.81	2.2702	17 53 57.7	8.559	19	18 3 0.03	2.4983	22 37 7.0	2.829
20	16 10 30.18	2.2754	18 2 28.5	8.466	20	18 5 30.04	2.5019	22 39 52.5	2.686
21	16 12 46.86	2.2807	18 10 53.6	8.371	21	18 8 0.26	2.5053	22 42 29.3	2.541
22	16 15 3.86	2.2859	18 19 13.0	8.276	22	18 10 30.68	2.5087	22 44 57.4	2.397
23	16 17 21.17	2.2912	18 27 26.7	8.180	23	18 13 1.30	2.5119	22 47 16.9	2.252
24	16 19 38.80	2.2965	18 35 34.6	8.082	24	18 15 32.11	2.5151	22 49 27.6	2.105
	16 21 56.75	2.3018	S. 18 43 36.5	7.982		18 18 3.11	2.5182	S. 22 51 29.5	1.955

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 25.					FRIDAY 27.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	18 18 3.11	2.5182	S. 22 51 29.5	1.958	0	20 20 38.31	2.5505	S. 21 29 36.7	5.382
1	18 20 34.29	2.5212	22 53 22.6	1.812	1	20 23 11.29	2.5488	21 24 9.3	5.530
2	18 23 5.65	2.5242	22 55 6.9	1.663	2	20 25 44.17	2.5470	21 18 33.1	5.677
3	18 25 37.19	2.5270	22 56 42.2	1.514	3	20 28 16.93	2.5451	21 12 48.0	5.824
4	18 28 8.89	2.5297	22 58 8.6	1.365	4	20 30 49.58	2.5431	21 6 54.2	5.970
5	18 30 40.76	2.5324	22 59 26.0	1.215	5	20 33 22.10	2.5409	21 0 51.6	6.116
6	18 33 12.78	2.5349	23 0 34.4	1.065	6	20 35 54.49	2.5387	20 54 40.3	6.261
7	18 35 44.95	2.5373	23 1 33.8	0.914	7	20 38 26.75	2.5366	20 48 20.3	6.404
8	18 38 17.26	2.5397	23 2 24.1	0.762	8	20 40 58.88	2.5343	20 41 51.8	6.547
9	18 40 49.71	2.5420	23 3 5.3	0.611	9	20 43 30.87	2.5319	20 35 14.7	6.689
10	18 43 22.30	2.5442	23 3 37.4	0.459	10	20 46 2.71	2.5294	20 28 29.1	6.831
11	18 45 55.01	2.5462	23 4 0.4	0.307	11	20 48 34.40	2.5268	20 21 35.0	6.971
12	18 48 27.84	2.5482	23 4 14.2	-0.153	12	20 51 5.93	2.5242	20 14 32.6	7.110
13	18 51 0.79	2.5500	23 4 18.8	0.000	13	20 53 37.31	2.5216	20 7 21.8	7.248
14	18 53 33.84	2.5517	23 4 14.2	+0.153	14	20 56 8.52	2.5188	20 0 2.8	7.386
15	18 56 7.00	2.5535	23 4 0.4	0.307	15	20 58 39.57	2.5160	19 52 35.5	7.523
16	18 58 40.26	2.5550	23 3 37.4	0.462	16	21 1 10.44	2.5131	19 45 0.0	7.658
17	19 1 13.60	2.5564	23 3 5.0	0.617	17	21 3 41.14	2.5102	19 37 16.5	7.792
18	19 3 47.03	2.5578	23 2 23.4	0.771	18	21 6 11.67	2.5072	19 29 24.9	7.927
19	19 6 20.54	2.5591	23 1 32.5	0.926	19	21 8 42.01	2.5042	19 21 25.3	8.060
20	19 8 54.12	2.5602	23 0 32.3	1.081	20	21 11 12.17	2.5011	19 13 17.7	8.192
21	19 11 27.77	2.5612	22 59 22.8	1.236	21	21 13 42.14	2.4979	19 5 2.3	8.321
22	19 14 1.47	2.5622	22 58 4.0	1.392	22	21 16 11.92	2.4947	18 56 39.2	8.450
23	19 16 35.23	2.5631	S. 22 56 35.8	1.547	23	21 18 41.50	2.4914	S. 18 48 8.3	8.579
THURSDAY 26.					SATURDAY 28.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	19 19 9.04	2.5638	S. 22 54 58.3	1.702	0	21 21 10.89	2.4882	S. 18 39 29.7	8.706
1	19 21 42.89	2.5644	22 53 11.5	1.858	1	21 23 40.08	2.4848	18 30 43.6	8.831
2	19 24 16.77	2.5649	22 51 15.3	2.014	2	21 26 9.06	2.4813	18 21 50.0	8.956
3	19 26 50.68	2.5653	22 49 9.8	2.169	3	21 28 37.84	2.4779	18 12 48.9	9.079
4	19 29 24.61	2.5657	22 46 55.0	2.324	4	21 31 6.41	2.4744	18 3 40.5	9.201
5	19 31 58.56	2.5658	22 44 30.9	2.480	5	21 33 34.77	2.4709	17 54 24.8	9.322
6	19 34 32.51	2.5659	22 41 57.4	2.636	6	21 36 2.92	2.4674	17 45 1.9	9.442
7	19 37 6.47	2.5659	22 39 14.6	2.791	7	21 38 30.86	2.4637	17 35 31.8	9.560
8	19 39 40.42	2.5658	22 36 22.5	2.946	8	21 40 58.57	2.4601	17 25 54.7	9.677
9	19 42 14.37	2.5657	22 33 21.1	3.100	9	21 43 26.07	2.4565	17 16 10.6	9.792
10	19 44 48.30	2.5653	22 30 10.5	3.255	10	21 45 53.35	2.4528	17 6 19.6	9.907
11	19 47 22.21	2.5649	22 26 50.5	3.410	11	21 48 20.41	2.4491	16 56 21.8	10.020
12	19 49 56.09	2.5644	22 23 21.3	3.564	12	21 50 47.24	2.4453	16 46 17.2	10.132
13	19 52 29.94	2.5637	22 19 42.8	3.717	13	21 53 13.85	2.4416	16 36 6.0	10.242
14	19 55 3.74	2.5630	22 15 55.2	3.871	14	21 55 40.23	2.4378	16 25 48.2	10.351
15	19 57 37.50	2.5622	22 11 58.3	4.024	15	21 58 6.39	2.4340	16 15 23.9	10.458
16	20 0 11.21	2.5613	22 7 52.3	4.177	16	22 0 32.31	2.4302	16 4 53.2	10.564
17	20 2 44.86	2.5603	22 3 37.1	4.330	17	22 2 58.01	2.4264	15 54 16.2	10.668
18	20 5 18.45	2.5592	21 59 12.7	4.482	18	22 5 23.48	2.4225	15 43 33.0	10.772
19	20 7 51.96	2.5579	21 54 39.3	4.632	19	22 7 48.71	2.4186	15 32 43.6	10.874
20	20 10 25.40	2.5567	21 49 56.8	4.783	20	22 10 13.71	2.4147	15 21 48.1	10.974
21	20 12 58.76	2.5553	21 45 5.3	4.934	21	22 12 38.48	2.4109	15 10 46.7	11.072
22	20 15 32.04	2.5539	21 40 4.7	5.084	22	22 15 3.02	2.4071	14 59 39.4	11.170
23	20 18 5.23	2.5522	21 34 55.2	5.233	23	22 17 27.33	2.4032	14 48 26.3	11.266
24	20 20 38.31	2.5505	S. 21 29 36.7	5.382	24	22 19 51.40	2.3992	S. 14 37 7.5	11.360

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 29.					TUESDAY 31.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	22 19 51.40	2.3992	S. 14 37 7.5	11.360	1	0 10 48.69	2.2347	S. 4 13 13.4	14.017
2	22 22 15.24	2.3953	14 25 43.1	11.452	2	0 13 2.70	2.2322	3 59 11.9	14.032
3	22 24 38.84	2.3915	14 14 13.2	11.544	3	0 15 16.56	2.2297	3 45 9.6	14.046
4	22 27 2.22	2.3877	14 2 37.8	11.634	4	0 17 30.26	2.2272	3 31 6.4	14.059
5	22 29 25.36	2.3837	13 50 57.1	11.722	5	0 19 43.82	2.2248	3 17 2.5	14.070
6	22 31 48.26	2.3797	13 39 11.2	11.808	6	0 21 57.24	2.2224	3 2 58.0	14.080
7	22 34 10.93	2.3759	13 27 20.1	11.894	7	0 24 10.51	2.2201	2 48 52.9	14.088
8	22 36 33.37	2.3721	13 15 23.9	11.977	8	0 26 23.65	2.2178	2 34 47.4	14.095
9	22 38 55.58	2.3682	13 3 22.8	12.059	9	0 28 36.65	2.2156	2 20 41.5	14.100
10	22 41 17.56	2.3643	12 51 16.8	12.140	10	0 30 49.52	2.2134	2 6 35.4	14.103
11	22 43 39.30	2.3604	12 39 6.0	12.219	11	0 33 2.26	2.2112	1 52 29.1	14.106
12	22 46 0.81	2.3567	12 26 50.5	12.296	12	0 35 14.87	2.2092	1 38 22.7	14.107
13	22 48 22.10	2.3529	12 14 30.5	12.371	13	0 37 27.36	2.2072	1 24 16.3	14.105
14	22 50 43.16	2.3491	12 2 6.0	12.445	14	0 39 39.73	2.2052	1 10 10.1	14.102
15	22 53 3.99	2.3452	11 49 37.1	12.517	15	0 41 51.98	2.2032	0 56 4.0	14.099
16	22 55 24.59	2.3415	11 37 3.9	12.588	16	0 44 4.11	2.2012	0 41 58.2	14.093
17	22 57 44.97	2.3378	11 24 26.5	12.657	17	0 46 16.13	2.1994	0 27 52.8	14.086
18	23 0 5.13	2.3341	11 11 45.0	12.726	18	0 48 28.04	2.1977	S. 0 13 47.9	14.077
19	23 2 25.06	2.3304	10 58 59.4	12.792	19	0 50 39.85	2.1959	N. 0 0 16.5	14.068
20	23 4 44.78	2.3267	10 46 10.0	12.855	20	0 52 51.55	2.1942	0 14 20.3	14.057
21	23 7 4.27	2.3230	10 33 16.8	12.918	21	0 55 3.15	2.1925	0 28 23.3	14.043
22	23 9 23.54	2.3194	10 20 19.8	12.980	22	0 57 14.65	2.1909	0 42 25.5	14.029
23	23 11 42.60	2.3159	10 7 19.2	13.040	23	0 59 26.06	2.1893	0 56 26.8	14.013
24	23 14 1.45	2.3123	S. 9 54 15.0	13.097		1 1 37.37	2.1877	N. 1 10 27.1	13.997
MONDAY 30.					WEDNESDAY, APRIL 1.				
0	23 16 20.08	2.3087	S. 9 41 7.5	13.152	0	1 3 48.59	2.1863	N. 1 24 26.4	13.978
1	23 18 38.50	2.3052	9 27 56.7	13.207	PHASES OF THE MOON.				
2	23 20 56.71	2.3017	9 14 42.6	13.261					
3	23 23 14.71	2.2983	9 1 25.4	13.312					
4	23 25 32.51	2.2950	8 48 5.2	13.362					
5	23 27 50.11	2.2916	8 34 42.0	13.410	d h m ● New Moon Mar. 2 6 56.9 ☾ First Quarter 9 9 42.1 ○ Full Moon 17 14 28.5 ☾ Last Quarter 25 0 31.6 ● New Moon 31 17 2.2				
6	23 30 7.50	2.2882	8 21 16.0	13.457					
7	23 32 24.69	2.2849	8 7 47.2	13.502					
8	23 34 41.69	2.2817	7 54 15.8	13.545					
9	23 36 58.49	2.2784	7 40 41.8	13.587					
10	23 39 15.10	2.2752	7 27 5.4	13.626					
11	23 41 31.51	2.2720	7 13 26.7	13.664					
12	23 43 47.74	2.2689	6 59 45.7	13.701					
13	23 46 3.78	2.2658	6 46 2.6	13.736					
14	23 48 19.64	2.2628	6 32 17.4	13.770					
15	23 50 35.32	2.2598	6 18 30.2	13.802					
16	23 52 50.82	2.2568	6 4 41.2	13.832					
17	23 55 6.14	2.2539	5 50 50.4	13.861					
18	23 57 21.29	2.2511	5 36 57.9	13.888					
19	23 59 36.27	2.2482	5 23 3.8	13.913					
20	0 1 51.08	2.2455	5 9 8.3	13.937					
21	0 4 5.73	2.2427	4 55 11.4	13.959					
22	0 6 20.21	2.2400	4 41 13.2	13.979					
23	0 8 34.53	2.2373	4 27 13.9	13.998					
24	0 10 48.69	2.2347	S. 4 13 13.4	14.017					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
4	SUN W.	24 4 25	2596	25 43 26	2606	27 22 13	2617	29 0 46	2628
	Aldebaran E.	61 7 1	2217	59 18 59	2233	57 31 20	2249	55 44 5	2266
	Pollux E.	105 17 41	2235	103 30 6	2250	101 42 53	2265	99 56 2	2281
	JUPITER E.	117 29 33	2188	115 40 48	2204	113 52 26	2219	112 4 27	2235
5	SUN W.	37 9 6	2701	38 45 44	2719	40 21 59	2736	41 57 52	2753
	Aldebaran E.	46 54 5	2353	45 9 22	2371	43 25 6	2390	41 41 17	2409
	Pollux E.	91 7 49	2366	89 23 25	2384	87 39 27	2402	85 55 55	2420
	JUPITER E.	103 10 41	2321	101 25 12	2339	99 40 9	2357	97 55 32	2375
6	SUN W.	49 51 16	2847	51 24 43	2867	52 57 44	2886	54 30 21	2905
	Aldebaran E.	33 9 0	2507	31 27 57	2527	29 47 21	2548	28 7 14	2569
	Pollux E.	77 24 48	2514	75 43 54	2538	74 3 26	2552	72 23 24	2571
	JUPITER E.	89 19 2	2468	87 37 4	2486	85 55 31	2504	84 14 24	2523
7	SUN W.	62 7 20	3001	63 37 31	3020	65 7 18	3039	66 36 43	3057
	VENUS W.	22 21 40	3174	23 48 20	3182	25 14 51	3190	26 41 12	3199
	Pollux E.	64 9 47	2668	62 32 20	2684	60 55 19	2702	59 18 42	2721
	JUPITER E.	75 55 15	2615	74 16 41	2633	72 38 31	2650	71 0 44	2668
8	SUN W.	73 58 11	3147	75 25 24	3163	76 52 17	3179	78 18 51	3196
	VENUS W.	33 49 54	3258	35 14 55	3271	36 39 40	3284	38 4 10	3297
	α Arietis W.	28 18 14	3454	29 39 29	3411	31 1 33	3372	32 24 21	3339
	MARS W.	21 55 21	3132	23 22 52	3137	24 50 17	3143	26 17 35	3150
	Pollux E.	51 21 41	2811	49 47 27	2828	48 13 35	2845	46 40 6	2862
	JUPITER E.	62 57 35	2751	61 22 3	2767	59 46 53	2783	58 12 3	2797
9	SUN W.	85 26 56	3272	86 51 41	3286	88 16 9	3299	89 40 22	3312
	VENUS W.	45 2 51	3363	46 25 50	3375	47 48 35	3386	49 11 7	3398
	α Arietis W.	39 25 45	3249	40 50 56	3240	42 16 18	3233	43 41 49	3228
	MARS W.	33 31 49	3193	34 58 7	3202	36 24 14	3211	37 50 10	3221
	Pollux E.	38 58 9	2947	37 26 50	2964	35 55 53	2981	34 25 17	2998
	JUPITER E.	50 22 35	2868	48 49 35	2880	47 16 51	2893	45 44 23	2905
10	SUN W.	96 37 53	3369	98 0 44	3379	99 23 23	3389	100 45 52	3399
	VENUS W.	56 0 37	3451	57 21 56	3461	58 43 4	3470	60 4 2	3478
	α Arietis W.	50 50 30	3216	52 16 20	3216	53 42 10	3216	55 8 0	3215
	MARS W.	44 57 1	3266	46 21 52	3274	47 46 33	3282	49 11 5	3289
	Aldebaran W.	18 5 56	3023	19 35 40	3027	21 5 19	3032	22 34 52	3036
	JUPITER E.	38 5 44	2959	36 34 39	2968	35 3 47	2977	33 33 6	2986
	Spica E.	116 18 54	3020	114 49 6	3027	113 19 27	3035	111 49 58	3043
11	SUN W.	107 35 48	3438	108 57 22	3444	110 18 48	3450	111 40 8	3455
	VENUS W.	66 46 46	3512	68 6 56	3518	69 27 0	3523	70 46 58	3528
	α Arietis W.	62 17 2	3221	63 42 47	3222	65 8 30	3223	66 34 12	3223
	MARS W.	56 11 45	3321	57 35 32	3326	58 59 12	3331	60 22 47	3335
	Aldebaran W.	30 1 18	3058	31 30 19	3062	32 59 15	3066	34 28 6	3069
	JUPITER E.	26 2 12	3022	24 32 27	3028	23 2 50	3034	21 33 20	3041
	Spica E.	104 24 45	3075	102 56 5	3080	101 27 31	3084	99 59 2	3089
12	SUN W.	118 25 29	3476	119 46 20	3478	121 7 8	3480	122 27 54	3483
	VENUS W.	77 25 40	3545	78 45 15	3547	80 4 47	3548	81 24 18	3549

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
4	SUN W.	30 39 3	2641	32 17 3	2655	33 54 44	2669	35 32 5	2684
	Aldebaran E.	53 57 15	2283	52 10 49	2300	50 24 49	2317	48 39 14	2335
	Pollux E.	98 9 35	2298	96 23 32	2314	94 37 53	2331	92 52 39	2348
	JUPITER E.	110 16 52	2258	108 29 42	2269	106 42 57	2286	104 56 36	2303
5	SUN W.	43 33 22	2772	45 8 27	2790	46 43 8	2809	48 17 24	2828
	Aldebaran E.	39 57 54	2428	38 14 59	2448	36 32 32	2467	34 50 32	2487
	Pollux E.	84 12 49	2439	82 30 9	2458	80 47 56	2476	79 6 9	2495
	JUPITER E.	96 11 21	2394	94 27 37	2412	92 44 19	2430	91 1 27	2449
6	SUN W.	56 2 34	2924	57 34 22	2943	59 5 45	2962	60 36 45	2982
	Aldebaran E.	26 27 36	2590	24 48 27	2612	23 9 48	2635	21 31 40	2657
	Pollux E.	70 43 49	2590	69 4 40	2609	67 25 57	2627	65 47 39	2646
	JUPITER E.	82 33 43	2542	80 53 28	2561	79 13 39	2579	77 34 14	2597
7	SUN W.	68 5 45	3076	69 34 24	3094	71 2 41	3111	72 30 37	3129
	VENUS W.	28 7 23	3209	29 33 22	3220	30 59 7	3232	32 24 38	3245
	Pollux E.	57 42 30	2739	56 6 42	2757	54 31 18	2775	52 56 18	2793
	JUPITER E.	69 23 21	2685	67 46 21	2702	66 9 44	2719	64 33 29	2735
8	SUN W.	79 45 5	3212	81 11. 0	3228	82 36 36	3243	84 1 55	3258
	VENUS W.	39 28 25	3311	40 52 24	3324	42 16 8	3337	43 39 37	3350
	α Arietis W.	33 47 47	3313	35 11 43	3321	36 36 5	3324	38 0 47	3330
	MARS W.	27 44 45	3157	29 11 46	3165	30 38 38	3174	32 5 19	3183
	Pollux E.	45 6 59	2880	43 34 14	2897	42 1 51	2913	40 29 49	2930
	JUPITER E.	56 37 31	2812	55 3 19	2827	53 29 27	2841	51 55 52	2855
9	SUN W.	91 4 20	3324	92 28 3	3336	93 51 33	3347	95 14 49	3358
	VENUS W.	50 33 26	3409	51 55 32	3420	53 17 25	3431	54 39 7	3441
	α Arietis W.	45 7 26	3224	46 33 7	3221	47 58 52	3218	49 24 40	3216
	MARS W.	39 15 54	3231	40 41 26	3240	42 6 48	3249	43 32 0	3258
	Pollux E.	32 55 2	3016	31 25 9	3035	29 55 40	3053	28 26 33	3072
	JUPITER E.	44 12 11	2917	42 40 14	2928	41 8 31	2939	39 37 1	2949
10	SUN W.	102 8 10	3408	103 30 18	3416	104 52 16	3423	106 14 6	3431
	VENUS W.	61 24 52	3486	62 45 32	3493	64 6 4	3499	65 26 29	3506
	α Arietis W.	56 33 51	3216	57 59 41	3218	59 25 29	3219	60 51 16	3220
	MARS W.	50 35 29	3297	51 59 44	3304	53 23 51	3310	54 47 51	3315
	Aldebaran W.	24 4 20	3040	25 33 43	3045	27 3 0	3049	28 32 12	3054
	JUPITER E.	32 2 36	2994	30 32 16	3002	29 2 6	3009	27 32 5	3016
	Spica E.	110 20 39	3050	108 51 29	3057	107 22 27	3063	105 53 32	3069
11	SUN W.	113 1 23	3460	114 22 32	3465	115 43 35	3469	117 4 34	3472
	VENUS W.	72 6 51	3532	73 26 39	3536	74 46 23	3540	76 6 3	3543
	α Arietis W.	67 59 54	3224	69 25 35	3225	70 51 15	3225	72 16 55	3225
	MARS W.	61 46 18	3339	63 9 44	3342	64 33 6	3345	65 56 25	3348
	Aldebaran W.	35 56 53	3073	37 25 36	3076	38 54 15	3078	40 22 51	3080
	JUPITER E.	20 3 58	3046	18 34 42	3051	17 5 33	3056	15 36 30	3060
	Spica E.	98 30 39	3093	97 2 21	3097	95 34 8	3100	94 5 58	3102
12	SUN W.	123 48 37	3485	125 9 18	3486	126 29 58	3487	127 50 37	3488
	VENUS W.	82 43 47	3550	84 3 16	3552	85 22 43	3551	86 42 11	3550

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
12	α Arietis	W.	73 42 34	3225	75 8 13	3225	76 33 52	3225	77 59 32	3225
	MARS	W.	67 19 41	3350	68 42 54	3352	70 6 5	3353	71 29 15	3354
	Aldebaran	W.	41 51 25	3082	43 19 56	3083	44 48 26	3084	46 16 54	3085
	Spica	E.	92 37 51	3105	91 9 47	3107	89 41 46	3108	88 13 46	3110
13	VENUS	W.	88 1 40	3549	89 21 9	3548	90 40 40	3546	92 0 13	3545
	α Arietis	W.	85 8 1	3220	86 33 47	3218	87 59 34	3216	89 25 24	3214
	MARS	W.	78 24 57	3353	79 48 7	3352	81 11 18	3350	82 34 32	3348
	Aldebaran	W.	53 39 8	3084	55 7 37	3083	56 36 7	3081	58 4 39	3079
	Spica	E.	80 54 4	3111	79 26 8	3110	77 58 11	3109	76 30 12	3108
	Antares	E.	126 45 44	3131	125 18 12	3129	123 50 38	3126	122 23 0	3122
14	VENUS	W.	98 38 38	3529	99 58 30	3526	101 18 25	3522	102 38 25	3517
	α Arietis	W.	96 35 9	3204	98 1 14	3201	99 27 22	3198	100 53 34	3195
	MARS	W.	89 31 22	3333	90 54 55	3329	92 18 32	3325	93 42 14	3320
	Aldebaran	W.	65 28 4	3065	66 56 56	3061	68 25 52	3057	69 54 54	3053
	Pollux	W.	21 53 0	3211	23 18 56	3192	24 45 15	3174	26 11 55	3158
	Spica	E.	69 9 49	3097	67 41 36	3094	66 13 19	3091	64 44 59	3088
	Antares	E.	115 3 40	3102	113 35 33	3098	112 7 21	3093	110 39 3	3087
15	VENUS	W.	109 19 47	3491	110 40 21	3485	112 1 1	3479	113 21 49	3473
	MARS	W.	100 42 9	3294	102 6 27	3289	103 30 51	3283	104 55 22	3276
	Aldebaran	W.	77 21 28	3028	78 51 6	3023	80 20 50	3017	81 50 42	3011
	Pollux	W.	33 29 43	3093	34 58 1	3083	36 26 31	3073	37 55 14	3063
	JUPITER	W.	21 39 23	3012	23 9 21	3006	24 39 26	2999	26 9 40	2993
	Spica	E.	57 22 15	3070	55 53 29	3066	54 24 38	3062	52 55 42	3058
	Antares	E.	103 15 55	3060	101 46 57	3054	100 17 52	3048	98 48 39	3042
16	Aldebaran	W.	89 21 56	2978	90 52 36	2972	92 23 24	2965	93 54 21	2958
	Pollux	W.	45 21 49	3016	46 51 42	3007	48 21 46	2998	49 52 2	2989
	JUPITER	W.	33 42 46	2960	35 13 49	2953	36 45 0	2946	38 16 20	2939
	Spica	E.	45 29 50	3039	44 0 25	3036	42 30 57	3033	41 1 25	3031
	Antares	E.	91 20 34	3009	89 50 32	3002	88 20 22	2995	86 50 3	2988
17	Aldebaran	W.	101 31 23	2920	103 3 16	2912	104 35 19	2905	106 7 32	2898
	Pollux	W.	57 26 5	2945	58 57 27	2936	60 28 59	2928	62 0 43	2919
	JUPITER	W.	45 55 17	2902	47 27 33	2895	48 59 58	2887	50 32 34	2879
	Antares	E.	79 16 12	2952	77 44 59	2944	76 13 36	2937	74 42 4	2930
	α Aquilæ	E.	121 53 15	3883	120 39 38	3846	119 25 23	3811	118 10 32	3778
18	Pollux	W.	69 42 5	2876	71 14 55	2867	72 47 56	2859	74 21 8	2850
	JUPITER	W.	58 18 4	2839	59 51 40	2831	61 25 27	2823	62 59 25	2815
	Antares	E.	67 2 5	2893	65 29 37	2886	63 57 0	2879	62 24 14	2872
	α Aquilæ	E.	111 48 2	3634	110 30 4	3611	109 11 41	3588	107 52 54	3566
19	Pollux	W.	82 9 54	2807	83 44 13	2799	85 18 42	2790	86 53 23	2782
	JUPITER	W.	70 51 50	2775	72 26 51	2766	74 2 3	2758	75 37 26	2750
	Antares	E.	54 38 13	2839	53 4 36	2833	51 30 50	2827	49 56 57	2821
	α Aquilæ	E.	101 13 31	3477	99 52 41	3462	98 31 34	3448	97 10 11	3435
20	Pollux	W.	94 49 33	2740	96 25 20	2731	98 1 19	2723	99 37 29	2715
	JUPITER	W.	83 37 5	2708	85 13 34	2700	86 50 13	2692	88 27 4	2683

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
12	α Arietis W.	79 25 12	3224	80 50 53	3223	82 16 34	3222	83 42 17	3221
	MARS W.	72 52 24	3355	74 15 32	3355	75 38 40	3355	77 1 48	3354
	Aldebaran W.	47 45 21	3086	49 13 48	3087	50 42 14	3086	52 10 41	3085
	Spica E.	86 45 48	3111	85 17 51	3112	83 49 56	3111	82 22 0	3111
13	VENUS W.	93 19 48	3542	94 39 26	3539	95 59 6	3536	97 18 50	3533
	α Arietis W.	90 51 16	3212	92 17 10	3210	93 43 7	3208	95 9 7	3206
	MARS W.	83 57 48	3346	85 21 7	3343	86 44 28	3340	88 7 53	3337
	Aldebaran W.	59 33 14	3077	61 1 52	3075	62 30 32	3072	63 59 16	3069
	Spica E.	75 2 12	3106	73 34 10	3104	72 6 6	3102	70 37 59	3100
	Antares E.	120 55 17	3118	119 27 30	3114	117 59 38	3110	116 31 41	3106
14	VENUS W.	103 58 30	3512	105 18 41	3507	106 38 57	3502	107 59 19	3497
	α Arietis W.	102 19 49	3193	103 46 7	3190	105 12 28	3187	106 38 53	3183
	MARS W.	95 6 2	3316	96 29 55	3312	97 53 53	3306	99 17 58	3300
	Aldebaran W.	71 24 1	3048	72 53 14	3044	74 22 32	3039	75 51 57	3034
	Pollux W.	27 38 55	3143	29 6 13	3129	30 33 48	3116	32 1 38	3104
	Spica E.	63 16 35	3085	61 48 7	3081	60 19 34	3077	58 50 57	3073
	Antares E.	109 10 38	3082	107 42 7	3077	106 13 30	3072	104 44 46	3066
15	VENUS W.	114 42 43	3467	116 3 44	3460	117 24 53	3453	118 46 9	3446
	MARS W.	106 20 1	3270	107 44 47	3264	109 9 40	3257	110 34 41	3250
	Aldebaran W.	83 20 41	3005	84 50 48	2999	86 21 2	2992	87 51 25	2985
	Pollux W.	39 24 10	3053	40 53 17	3043	42 22 36	3034	43 52 7	3025
	JUPITER W.	27 40 1	2987	29 10 30	2981	30 41 7	2974	32 11 52	2967
	Spica E.	51 26 41	3054	49 57 35	3051	48 28 25	3047	46 59 10	3043
	Antares E.	97 19 18	3036	95 49 50	3029	94 20 13	3022	92 50 28	3015
16	Aldebaran W.	95 25 27	2950	96 56 42	2943	98 28 6	2935	99 59 40	2928
	Pollux W.	51 22 29	2980	52 53 7	2971	54 23 55	2962	55 54 55	2954
	JUPITER W.	39 47 49	2932	41 19 27	2925	42 51 14	2917	44 23 11	2910
	Spica E.	39 31 51	3029	38 2 14	3026	36 32 34	3026	35 2 53	3026
	Antares E.	85 19 35	2981	83 48 58	2973	82 18 12	2966	80 47 17	2959
17	Aldebaran W.	107 39 54	2890	109 12 26	2882	110 45 9	2874	112 18 1	2866
	Pollux W.	63 32 37	2910	65 4 43	2902	66 36 59	2893	68 9 26	2884
	JUPITER W.	52 5 20	2872	53 38 15	2863	55 11 21	2855	56 44 37	2847
	Antares E.	73 10 23	2922	71 38 32	2915	70 6 33	2908	68 34 24	2900
	α Aquilæ E.	116 55 6	3746	115 39 7	3715	114 22 35	3686	113 5 33	3659
18	Pollux W.	75 54 31	2842	77 28 5	2833	79 1 50	2824	80 35 46	2815
	JUPITER W.	64 33 33	2808	66 7 51	2799	67 42 20	2791	69 17 0	2783
	Antares E.	60 51 19	2865	59 18 15	2859	57 45 3	2852	56 11 42	2845
	α Aquilæ E.	106 33 43	3546	105 14 10	3528	103 54 17	3510	102 34 4	3493
19	Pollux W.	88 28 15	2773	90 3 18	2765	91 38 32	2756	93 13 57	2748
	JUPITER W.	77 13 0	2742	78 48 45	2734	80 24 40	2725	82 0 47	2716
	Antares E.	48 22 56	2816	46 48 48	2811	45 14 34	2806	43 40 14	2802
	α Aquilæ E.	95 48 34	3423	94 26 43	3412	93 4 40	3401	91 42 25	3391
20	Pollux W.	101 13 49	2706	102 50 21	2698	104 27 3	2689	106 3 57	2681
	JUPITER W.	90 4 7	2675	91 41 20	2666	93 18 45	2657	94 56 22	2649

GREENWICH MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
20	Antares	E.	42 5 49	2798	40 31 19	2795	38 56 44	2793	37 22 6	2791
	α Aquilæ	E.	90 19 58	3383	88 57 22	3375	87 34 37	3369	86 11 45	3363
	Fomalhaut	E.	124 26 30	3008	122 56 27	2990	121 26 2	2973	119 55 15	2955
21	Pollux	W.	107 41 2	2673	109 18 18	2665	110 55 45	2657	112 33 23	2649
	JUPITER	W.	96 34 10	2641	98 12 9	2632	99 50 20	2624	101 28 43	2615
	Spica	W.	18 53 18	2950	20 24 33	2901	21 56 51	2858	23 30 4	2821
	α Aquilæ	E.	79 16 3	3347	77 52 45	3348	76 29 29	3349	75 6 14	3351
	Fomalhaut	E.	112 16 10	2879	110 43 24	2865	109 10 20	2852	107 37 0	2840
22	JUPITER	W.	109 43 32	2572	111 23 5	2563	113 2 51	2554	114 42 49	2545
	Spica	W.	31 26 18	2694	33 3 6	2675	34 40 19	2658	36 17 55	2642
	α Aquilæ	E.	68 11 7	3383	66 48 31	3394	65 26 8	3408	64 4 1	3424
	Fomalhaut	E.	99 46 20	2781	98 11 27	2770	96 36 20	2760	95 0 59	2750
	SUN	E.	127 53 9	2943	126 21 45	2933	124 50 8	2922	123 18 17	2912
23	Spica	W.	44 31 11	2570	46 10 48	2558	47 50 41	2545	49 30 52	2532
	α Aquilæ	E.	57 18 41	3540	55 59 1	3573	54 39 57	3610	53 21 33	3652
	Fomalhaut	E.	87 1 3	2703	85 24 27	2695	83 47 40	2687	82 10 42	2679
	SUN	E.	115 35 41	2859	114 2 29	2848	112 29 4	2838	110 55 25	2827
24	Spica	W.	57 55 59	2474	59 37 48	2463	61 19 53	2452	63 2 14	2441
	Fomalhaut	E.	74 3 26	2646	72 25 33	2640	70 47 32	2635	69 9 24	2630
	SUN	E.	103 3 43	2774	101 28 41	2763	99 53 25	2753	98 17 55	2743
25	Spica	W.	71 37 46	2389	73 21 37	2379	75 5 42	2369	76 50 2	2359
	Antares	W.	26 9 14	2524	27 49 54	2496	29 31 12	2472	31 13 4	2450
	Fomalhaut	E.	60 57 30	2618	59 18 59	2619	57 40 30	2621	56 2 3	2623
	SUN	E.	90 17 0	2691	88 40 8	2681	87 3 2	2670	85 25 42	2660
26	Spica	W.	85 35 11	2312	87 20 54	2303	89 6 49	2294	90 52 57	2286
	Antares	W.	39 49 37	2361	41 34 8	2347	43 18 59	2333	45 4 10	2320
	Fomalhaut	E.	47 51 22	2662	46 13 51	2676	44 36 39	2694	42 59 51	2716
	SUN	E.	77 15 44	2612	75 37 6	2603	73 58 15	2594	72 19 12	2585
27	Spica	W.	99 46 35	2248	101 33 52	2241	103 21 18	2235	105 8 54	2229
	Antares	W.	53 54 26	2266	55 41 16	2257	57 28 19	2248	59 15 35	2239
	SUN	E.	64 1 2	2545	62 20 52	2538	60 40 32	2532	59 0 3	2525
28	Antares	W.	68 14 47	2206	70 3 6	2200	71 51 34	2195	73 40 9	2191
	α Aquilæ	W.	35 56 31	5187	36 51 2	4921	37 49 0	4687	38 50 11	4480
	SUN	E.	50 35 41	2501	48 54 29	2498	47 13 13	2496	45 31 53	2494
29	Antares	W.	82 44 26	2177	84 33 28	2176	86 22 32	2175	88 11 37	2176
	α Aquilæ	W.	44 36 12	3758	45 51 58	3659	47 9 29	3570	48 28 36	3489
	SUN	E.	37 4 54	2495	35 23 34	2498	33 42 18	2503	32 1 8	2509

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
20	Antares	E.	35 47 26	2791	34 12 46	2792	32 38 8	2794	31 3 32	2795
	α Aquilæ	E.	84 48 46	3358	83 25 41	3354	82 2 32	3351	80 39 19	3348
	Fomalhaut	E.	118 24 6	2939	116 52 37	2923	115 20 47	2908	113 48 38	2893
21	Pollux	W.	114 11 12	2640	115 49 12	2632	117 27 23	2624	119 5 45	2615
	JUPITER	W.	103 7 17	2607	104 46 3	2598	106 25 0	2589	108 4 10	2580
	Spica	W.	25 4 5	2789	26 38 47	2761	28 14 6	2737	29 49 57	2714
	α Aquilæ	E.	73 43 1	3354	72 19 52	3359	70 56 49	3366	69 33 53	3374
	Fomalhaut	E.	106 3 23	2827	104 29 30	2815	102 55 22	2803	101 20 58	2792
22	JUPITER	W.	116 23 0	2556	118 3 23	2527	119 43 58	2518	121 24 46	2510
	Spica	W.	37 55 54	2626	39 34 14	2612	41 12 53	2597	42 51 52	2583
	α Aquilæ	E.	62 42 12	3442	61 20 42	3462	59 59 35	3485	58 38 53	3511
	Fomalhaut	E.	93 25 25	2740	91 49 38	2731	90 13 39	2721	88 37 27	2712
	SUN	E.	121 46 13	2901	120 13 55	2891	118 41 24	2880	117 8 39	2869
23	Spica	W.	51 11 21	2520	52 52 6	2509	54 33 7	2497	56 14 25	2485
	α Aquilæ	E.	52 3 55	3699	50 47 7	3751	49 31 13	3809	48 16 20	3876
	Fomalhaut	E.	80 33 34	2672	78 56 16	2664	77 18 48	2658	75 41 11	2652
	SUN	E.	109 21 32	2816	107 47 25	2806	106 13 5	2795	104 38 31	2785
24	Spica	W.	64 44 50	2430	66 27 41	2419	68 10 48	2409	69 54 10	2399
	Fomalhaut	E.	67 31 9	2626	65 52 49	2624	64 14 26	2621	62 35 59	2619
	SUN	E.	96 42 12	2732	95 6 15	2722	93 30 4	2711	91 53 39	2701
25	Spica	W.	78 34 36	2349	80 19 24	2339	82 4 26	2330	83 49 42	2321
	Antares	W.	32 55 28	2499	34 38 22	2410	36 21 42	2392	38 5 27	2376
	Fomalhaut	E.	54 23 39	2627	52 45 21	2632	51 7 10	2640	49 29 9	2650
	SUN	E.	83 48 9	2650	82 10 22	2641	80 32 23	2631	78 54 10	2621
26	Spica	W.	92 39 17	2278	94 25 50	2270	96 12 34	2262	97 59 29	2255
	Antares	W.	46 49 40	2308	48 35 27	2297	50 21 31	2286	52 7 51	2276
	Fomalhaut	E.	41 23 33	2742	39 47 49	2773	38 12 45	2809	36 38 29	2852
	SUN	E.	70 39 56	2577	69 0 29	2569	67 20 51	2561	65 41 2	2553
27	Spica	W.	106 56 38	2223	108 44 31	2218	110 32 31	2213	112 20 39	2209
	Antares	W.	61 3 4	2232	62 50 44	2225	64 38 35	2218	66 26 36	2212
	SUN	E.	57 19 26	2520	55 38 40	2515	53 57 47	2510	52 16 47	2505
28	Antares	W.	75 28 51	2187	77 17 38	2184	79 6 30	2181	80 55 26	2179
	α Aquilæ	W.	39 54 21	4298	41 1 15	4139	42 10 39	3997	43 22 22	3870
	SUN	E.	43 50 31	2492	42 9 6	2492	40 27 41	2492	38 46 17	2493
29	Antares	W.	90 0 41	2176	91 49 44	2177	93 38 46	2179	95 27 45	2182
	α Aquilæ	W.	49 49 12	3418	51 11 8	3355	52 34 16	3298	53 58 30	3247
	SUN	E.	30 20 7	2517	28 39 17	2526	26 58 40	2537	25 18 18	2549

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to		Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Subtracted from Apparent Time.				
Wed.	1	^h ^m ^s 0 41 46.95	^s 9.104	N. [°] ['] ["] 4 29 48.8	["] + 57.90	['] ["] 16 1.75	^s 64.47	^m ^s 4 0.22	^s 0.750		
Thur.	2	0 45 25.49	9.109	4 52 55.9	57.68	16 1.47	64.49	3 42.26	0.746		
Frid.	3	0 49 4.16	9.113	5 15 57.7	57.45	16 1.19	64.51	3 24.42	0.741		
Sat.	4	0 52 42.95	9.119	5 38 53.9	+ 57.21	16 0.92	64.53	3 6.72	0.735		
SUN.	5	0 56 21.90	9.126	6 1 44.3	56.96	16 0.65	64.56	2 49.17	0.728		
Mon.	6	1 0 1.02	9.134	6 24 28.2	56.69	16 0.38	64.59	2 31.77	0.721		
Tues.	7	1 3 40.32	9.142	6 47 5.6	+ 56.41	16 0.11	64.62	2 14.56	0.713		
Wed.	8	1 7 19.82	9.150	7 9 35.8	56.11	15 59.84	64.65	1 57.56	0.704		
Thur.	9	1 10 59.55	9.160	7 31 58.7	55.79	15 59.57	64.70	1 40.77	0.695		
Frid.	10	1 14 39.50	9.171	7 54 13.9	+ 55.47	15 59.31	64.74	1 24.22	0.685		
Sat.	11	1 18 19.71	9.182	8 16 21.0	55.12	15 59.04	64.78	1 7.93	0.674		
SUN.	12	1 22 0.19	9.193	8 38 19.6	54.76	15 58.77	64.82	0 51.91	0.662		
Mon.	13	1 25 40.97	9.206	9 0 9.7	+ 54.39	15 58.50	64.87	0 36.17	0.649		
Tues.	14	1 29 22.05	9.219	9 21 50.6	54.01	15 58.24	64.92	0 20.74	0.636		
Wed.	15	1 33 3.47	9.233	9 43 22.2	53.62	15 57.97	64.97	0 5.64	0.622		
Thur.	16	1 36 45.22	9.248	10 4 44.0	+ 53.21	15 57.70	65.02	0 9.12	0.607		
Frid.	17	1 40 27.35	9.264	10 25 56.0	52.79	15 57.43	65.07	0 23.50	0.591		
Sat.	18	1 44 9.87	9.280	10 46 57.6	52.36	15 57.17	65.13	0 37.51	0.575		
SUN.	19	1 47 52.78	9.297	11 7 48.6	+ 51.91	15 56.90	65.19	0 51.10	0.558		
Mon.	20	1 51 36.12	9.315	11 28 28.7	51.44	15 56.64	65.25	1 4.28	0.540		
Tues.	21	1 55 19.88	9.334	11 48 57.5	50.96	15 56.37	65.31	1 17.04	0.522		
Wed.	22	1 59 4.11	9.353	12 9 14.9	+ 50.47	15 56.11	65.37	1 29.33	0.503		
Thur.	23	2 2 48.81	9.372	12 29 20.4	49.97	15 55.85	65.43	1 41.16	0.483		
Frid.	24	2 6 33.98	9.392	12 49 13.9	49.46	15 55.59	65.50	1 52.51	0.463		
Sat.	25	2 10 19.64	9.413	13 8 54.7	+ 48.93	15 55.33	65.57	2 3.36	0.442		
SUN.	26	2 14 5.81	9.434	13 28 22.7	48.39	15 55.08	65.64	2 13.73	0.421		
Mon.	27	2 17 52.50	9.455	13 47 37.4	47.84	15 54.83	65.71	2 23.57	0.399		
Tues.	28	2 21 39.70	9.476	14 6 38.8	+ 47.27	15 54.58	65.79	2 32.91	0.378		
Wed.	29	2 25 27.41	9.498	14 25 26.3	46.68	15 54.33	65.86	2 41.72	0.356		
Thur.	30	2 29 15.64	9.520	14 43 59.6	46.09	15 54.08	65.94	2 50.02	0.334		
Frid.	31	2 33 4.42	9.543	N. 15 2 18.4	+ 45.48	15 53.84	66.01	2 57.77	0.312		

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.18 from the sidereal time.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from		Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Added to Mean Time.			
Wed.	1	^h 0 ^m 41 ^s 46.34	^s 9.106	N. 4 29 44.9	+ 57.91	^m 4 ^s 0.27	^s 0.750	^h 0 37 46.07	
Thur.	2	0 45 24.93	9.111	4 52 52.3	57.69	3 42.31	0.746	0 41 42.62	
Frid.	3	0 49 3.64	9.115	5 15 54.4	57.47	3 24.46	0.741	0 45 39.18	
Sat.	4	0 52 42.48	9.121	5 38 50.9	+ 57.23	3 6.75	0.735	0 49 35.73	
SUN.	5	0 56 21.48	9.128	6 1 41.6	56.98	2 49.20	0.728	0 53 32.28	
Mon.	6	1 0 0.64	9.135	6 24 25.8	56.70	2 31.80	0.721	0 57 28.84	
Tues.	7	1 3 39.98	9.143	6 47 3.4	+ 56.42	2 14.59	0.713	1 1 25.39	
Wed.	8	1 7 19.52	9.151	7 9 33.9	56.12	1 57.58	0.704	1 5 21.94	
Thur.	9	1 10 59.29	9.161	7 31 57.0	55.80	1 40.79	0.695	1 9 18.50	
Frid.	10	1 14 39.29	9.172	7 54 12.5	+ 55.48	1 24.24	0.685	1 13 15.05	
Sat.	11	1 18 19.54	9.183	8 16 19.9	55.13	1 7.94	0.674	1 17 11.60	
SUN.	12	1 22 0.06	9.194	8 38 18.8	54.77	0 51.90	0.662	1 21 8.16	
Mon.	13	1 25 40.88	9.207	9 0 9.1	+ 54.40	0 36.17	0.649	1 25 4.71	
Tues.	14	1 29 22.00	9.220	9 21 50.3	54.02	0 20.74	0.636	1 29 1.26	
Wed.	15	1 33 3.46	9.234	9 43 22.1	53.63	0 5.64	0.622	1 32 57.82	
Thur.	16	1 36 45.25	9.249	10 4 44.2	+ 53.22	0 9.12	0.607	1 36 54.37	
Frid.	17	1 40 27.42	9.265	10 25 56.4	52.80	0 23.50	0.591	1 40 50.92	
Sat.	18	1 44 9.97	9.281	10 46 58.2	52.37	0 37.51	0.575	1 44 47.48	
SUN.	19	1 47 52.92	9.298	11 7 49.4	+ 51.92	0 51.11	0.558	1 48 44.03	
Mon.	20	1 51 36.29	9.316	11 28 29.7	51.45	1 4.29	0.540	1 52 40.58	
Tues.	21	1 55 20.09	9.335	11 48 58.7	50.97	1 17.05	0.522	1 56 37.14	
Wed.	22	1 59 4.35	9.354	12 9 16.2	+ 50.48	1 29.34	0.503	2 0 33.69	
Thur.	23	2 2 49.08	9.373	12 29 21.8	49.98	1 41.17	0.483	2 4 30.25	
Frid.	24	2 6 34.28	9.393	12 49 15.4	49.47	1 52.52	0.463	2 8 26.80	
Sat.	25	2 10 19.97	9.414	13 8 56.3	+ 48.94	2 3.38	0.442	2 12 23.35	
SUN.	26	2 14 6.16	9.435	13 28 24.4	48.39	2 13.75	0.421	2 16 19.91	
Mon.	27	2 17 52.87	9.456	13 47 39.3	47.84	2 23.59	0.399	2 20 16.46	
Tues.	28	2 21 40.09	9.477	14 6 40.8	+ 47.27	2 32.93	0.378	2 24 13.02	
Wed.	29	2 25 27.83	9.499	14 25 28.4	46.69	2 41.74	0.356	2 28 9.57	
Thur.	30	2 29 16.09	9.521	14 44 1.8	46.09	2 50.04	0.334	2 32 6.13	
Frid.	31	2 33 4.89	9.544	N. 15 2 20.6	+ 45.48	2 57.79	0.312	2 36 2.68	

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

Diff. for 1 Hour.
+9°.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	92	11 21 55.8	22 0.8	147.97	— 0.23	9.999 8881	+ 52.2	h m s 23 18 24.21
2	93	12 21 6.0	21 10.9	147.88	0.21	0.000 0130	51.9	23 14 28.30
3	94	13 20 14.1	20 18.9	147.79	0.16	0.000 1373	51.6	23 10 32.39
4	95	14 19 20.0	19 24.6	147.70	— 0.08	0.000 2609	+ 51.3	23 6 36.48
5	96	15 18 23.6	18 28.2	147.61	+ 0.03	0.000 3839	51.1	23 2 40.58
6	97	16 17 25.0	17 29.4	147.51	0.15	0.000 5064	50.9	22 58 44.67
7	98	17 16 24.1	16 28.4	147.41	+ 0.27	0.000 6284	+ 50.8	22 54 48.76
8	99	18 15 20.9	15 25.1	147.32	0.39	0.000 7501	50.6	22 50 52.86
9	100	19 14 15.4	14 19.5	147.22	0.50	0.000 8715	50.5	22 46 56.95
10	101	20 13 7.6	13 11.7	147.13	+ 0.61	0.000 9926	+ 50.4	22 43 1.04
11	102	21 11 57.6	12 1.6	147.03	0.72	0.001 1135	50.4	22 39 5.14
12	103	22 10 45.4	10 49.2	146.94	0.80	0.001 2343	50.3	22 35 9.23
13	104	23 9 31.0	9 34.7	146.85	+ 0.87	0.001 3550	+ 50.3	22 31 13.32
14	105	24 8 14.4	8 18.0	146.76	0.91	0.001 4757	50.3	22 27 17.41
15	106	25 6 55.7	6 59.2	146.68	0.91	0.001 5964	50.3	22 23 21.50
16	107	26 5 35.0	5 38.4	146.60	+ 0.88	0.001 7171	+ 50.3	22 19 25.60
17	108	27 4 12.3	4 15.6	146.52	0.84	0.001 8378	50.3	22 15 29.69
18	109	28 2 47.7	2 50.9	146.44	0.75	0.001 9586	50.3	22 11 33.78
19	110	29 1 21.3	1 24.4	146.36	+ 0.65	0.002 0792	+ 50.2	22 7 37.87
20	111	29 59 53.2	59 56.1	146.29	0.54	0.002 1997	50.1	22 3 41.97
21	112	30 58 23.4	58 26.2	146.22	0.42	0.002 3199	50.0	21 59 46.06
22	113	31 56 51.9	56 54.6	146.16	+ 0.28	0.002 4396	+ 49.8	21 55 50.15
23	114	32 55 18.8	55 21.4	146.09	0.15	0.002 5588	49.5	21 51 54.24
24	115	33 53 44.2	53 46.7	146.03	+ 0.04	0.002 6772	49.1	21 47 58.33
25	116	34 52 8.1	52 10.4	145.97	— 0.06	0.002 7947	+ 48.6	21 44 2.42
26	117	35 50 30.4	50 32.6	145.90	0.13	0.002 9110	48.1	21 40 6.52
27	118	36 48 51.1	48 53.2	145.83	0.18	0.003 0260	47.6	21 36 10.61
28	119	37 47 10.2	47 12.2	145.76	— 0.20	0.003 1397	+ 47.0	21 32 14.70
29	120	38 45 27.6	45 29.5	145.69	0.17	0.003 2518	46.4	21 28 18.79
30	121	39 43 43.4	43 45.2	145.62	0.11	0.003 3622	45.7	21 24 22.88
31	122	40 41 57.4	41 59.1	145.55	— 0.03	0.003 4710	+ 45.0	21 20 26.97
NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.								
								Diff. for 1 Hour, — 9 ^s .8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	16 10.4	16 5.1	59 15.5	- 1.50	58 56.3	- 1.69	0 27.0	2.10	0.3
2	15 59.4	15 53.1	58 35.0	1.84	58 12.1	1.95	1 16.8	2.07	1.3
3	15 46.5	15 39.9	57 48.2	2.01	57 23.8	2.04	2 6.5	2.08	2.3
4	15 33.3	15 26.7	56 59.3	- 2.02	56 35.3	- 1.96	2 56.4	2.09	3.3
5	15 20.4	15 14.5	56 12.2	1.87	55 50.4	1.75	3 46.7	2.11	4.3
6	15 9.0	15 4.0	55 30.3	1.60	55 12.0	1.43	4 37.3	2.11	5.3
7	14 59.7	14 56.0	54 56.0	- 1.24	54 42.4	- 1.04	5 27.9	2.10	6.3
8	14 52.9	14 50.6	54 31.2	0.83	54 22.5	0.61	6 17.8	2.05	7.3
9	14 48.9	14 48.0	54 16.4	- 0.40	54 13.0	- 0.18	7 6.6	2.00	8.3
10	14 47.7	14 48.1	54 12.0	+ 0.03	54 13.6	+ 0.23	7 53.8	1.94	9.3
11	14 49.2	14 50.9	54 17.5	0.42	54 23.7	0.60	8 39.6	1.87	10.3
12	14 53.1	14 55.9	54 31.9	0.77	54 42.0	0.91	9 24.1	1.83	11.3
13	14 59.1	15 2.7	54 53.8	+ 1.04	55 7.0	+ 1.15	10 7.7	1.81	12.3
14	15 6.6	15 10.7	55 21.4	1.24	55 36.7	1.31	10 51.2	1.82	13.3
15	15 15.1	15 19.6	55 52.8	1.36	56 9.2	1.38	11 35.2	1.85	14.3
16	15 24.1	15 28.7	56 25.8	+ 1.38	56 42.4	+ 1.37	12 20.5	1.93	15.3
17	15 33.1	15 37.4	56 58.6	1.34	57 14.4	1.29	13 8.1	2.03	16.3
18	15 41.5	15 45.5	57 29.6	1.25	57 44.1	1.17	13 58.5	2.17	17.3
19	15 49.2	15 52.6	57 57.6	+ 1.09	58 10.3	+ 1.02	14 52.2	2.30	18.3
20	15 55.8	15 58.8	58 22.0	0.94	58 32.8	0.85	15 48.8	2.42	19.3
21	16 1.4	16 3.8	58 42.6	0.77	58 51.3	0.69	16 47.7	2.47	20.3
22	16 5.9	16 7.8	58 59.1	+ 0.60	59 5.9	+ 0.52	17 47.1	2.46	21.3
23	16 9.4	16 10.7	59 11.7	0.43	59 16.3	0.34	18 45.6	2.40	22.3
24	16 11.6	16 12.1	59 19.8	+ 0.23	59 21.9	+ 0.12	19 42.0	2.29	23.3
25	16 12.3	16 12.1	59 22.7	0.00	59 22.0	- 0.13	20 35.8	2.19	24.3
26	16 11.5	16 10.4	59 19.6	- 0.28	59 15.4	0.43	21 27.4	2.11	25.3
27	16 8.7	16 6.5	59 9.3	0.59	59 1.3	0.75	22 17.3	2.05	26.3
28	16 3.8	16 0.6	58 51.3	- 0.91	58 39.5	- 1.07	23 6.4	2.04	27.3
29	15 56.8	15 52.6	58 25.7	1.22	58 10.3	1.35	23 55.4	2.05	28.3
30	15 48.0	15 43.1	57 53.4	1.46	57 35.3	1.55	0	..	29.3
31	15 37.9	15 32.6	57 16.3	1.61	56 56.7	1.64	0 45.0	2.09	0.8
32	15 27.1	15 21.8	56 36.8	- 1.65	56 17.1	- 1.63	1 35.4	2.12	1.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 1.					FRIDAY 3.				
0	h m s	s	N. ° ' "	"	0	h m s	s	N. ° ' "	"
0	1 3 48.59	2.1863	1 24 26.4	13.978	0	2 47 53.76	2.1654	11 49 25.5	11.611
1	1 5 59.73	2.1849	1 38 24.5	13.958	1	2 50 3.70	2.1658	12 0 59.9	11.536
2	1 8 10.78	2.1835	1 52 21.4	13.937	2	2 52 13.66	2.1662	12 12 29.8	11.459
3	1 10 21.75	2.1822	2 6 16.9	13.913	3	2 54 23.64	2.1667	12 23 55.0	11.381
4	1 12 32.64	2.1809	2 20 11.0	13.890	4	2 56 33.66	2.1672	12 35 15.5	11.302
5	1 14 43.46	2.1797	2 34 3.7	13.865	5	2 58 43.70	2.1676	12 46 31.3	11.223
6	1 16 54.21	2.1785	2 47 54.8	13.837	6	3 0 53.77	2.1681	12 57 42.3	11.142
7	1 19 4.88	2.1773	3 1 44.2	13.809	7	3 3 3.87	2.1686	13 8 48.4	11.061
8	1 21 15.49	2.1763	3 15 31.9	13.780	8	3 5 14.00	2.1692	13 19 49.6	10.979
9	1 23 26.04	2.1752	3 29 17.8	13.749	9	3 7 24.17	2.1697	13 30 45.9	10.897
10	1 25 36.52	2.1742	3 43 1.8	13.717	10	3 9 34.37	2.1702	13 41 37.2	10.812
11	1 27 46.94	2.1732	3 56 43.9	13.684	11	3 11 44.60	2.1708	13 52 23.4	10.727
12	1 29 57.31	2.1723	4 10 23.9	13.649	12	3 13 54.87	2.1715	14 3 4.5	10.642
13	1 32 7.62	2.1715	4 24 1.8	13.613	13	3 16 5.18	2.1721	14 13 40.5	10.557
14	1 34 17.89	2.1707	4 37 37.5	13.576	14	3 18 15.52	2.1727	14 24 11.3	10.469
15	1 36 28.10	2.1698	4 51 10.9	13.537	15	3 20 25.91	2.1734	14 34 36.8	10.382
16	1 38 38.26	2.1691	5 4 41.9	13.497	16	3 22 36.33	2.1741	14 44 57.1	10.293
17	1 40 48.39	2.1685	5 18 10.5	13.456	17	3 24 46.80	2.1747	14 55 12.0	10.204
18	1 42 58.48	2.1678	5 31 36.6	13.413	18	3 26 57.30	2.1754	15 5 21.6	10.114
19	1 45 8.53	2.1672	5 45 0.1	13.370	19	3 29 7.85	2.1761	15 15 25.7	10.023
20	1 47 18.55	2.1667	5 58 21.0	13.325	20	3 31 18.43	2.1767	15 25 24.4	9.932
21	1 49 28.53	2.1661	6 11 39.1	13.278	21	3 33 29.06	2.1775	15 35 17.5	9.839
22	1 51 38.48	2.1656	6 24 54.4	13.232	22	3 35 39.73	2.1782	15 45 5.1	9.747
23	1 53 48.40	2.1651	N. 6 38 6.9	13.183	23	3 37 50.45	2.1790	N. 15 54 47.2	9.654
THURSDAY 2.					SATURDAY 4.				
0	h m s	s	N. ° ' "	"	0	h m s	s	N. ° ' "	"
0	1 55 58.29	2.1647	6 51 16.4	13.133	0	3 40 1.21	2.1797	16 4 23.6	9.559
1	1 58 8.16	2.1643	7 4 22.9	13.082	1	3 42 12.01	2.1804	16 13 54.3	9.465
2	2 0 18.01	2.1641	7 17 26.3	13.030	2	3 44 22.86	2.1812	16 23 19.4	9.370
3	2 2 27.85	2.1638	7 30 26.5	12.977	3	3 46 33.75	2.1819	16 32 38.7	9.273
4	2 4 37.67	2.1635	7 43 23.5	12.922	4	3 48 44.69	2.1827	16 41 52.2	9.176
5	2 6 47.47	2.1633	7 56 17.2	12.867	5	3 50 55.67	2.1834	16 50 59.8	9.078
6	2 8 57.26	2.1632	8 9 7.6	12.811	6	3 53 6.70	2.1842	17 0 1.6	8.981
7	2 11 7.04	2.1629	8 21 54.5	12.752	7	3 55 17.77	2.1848	17 8 57.5	8.882
8	2 13 16.81	2.1627	8 34 37.9	12.694	8	3 57 28.88	2.1855	17 17 47.5	8.783
9	2 15 26.57	2.1627	8 47 17.8	12.634	9	3 59 40.03	2.1863	17 26 31.5	8.683
10	2 17 36.34	2.1627	8 59 54.0	12.573	10	4 1 51.23	2.1871	17 35 9.5	8.583
11	2 19 46.10	2.1627	9 12 26.6	12.512	11	4 4 2.48	2.1877	17 43 41.5	8.482
12	2 21 55.86	2.1627	9 24 55.4	12.448	12	4 6 13.76	2.1884	17 52 7.4	8.381
13	2 24 5.63	2.1628	9 37 20.4	12.384	13	4 8 25.09	2.1892	18 0 27.2	8.279
14	2 26 15.40	2.1629	9 49 41.5	12.318	14	4 10 36.47	2.1899	18 8 40.9	8.177
15	2 28 25.18	2.1630	10 1 58.6	12.252	15	4 12 47.88	2.1906	18 16 48.5	8.074
16	2 30 34.96	2.1632	10 14 11.7	12.185	16	4 14 59.34	2.1914	18 24 49.8	7.970
17	2 32 44.76	2.1634	10 26 20.8	12.117	17	4 17 10.85	2.1921	18 32 44.9	7.866
18	2 34 54.57	2.1636	10 38 25.7	12.047	18	4 19 22.39	2.1927	18 40 33.7	7.762
19	2 37 4.39	2.1638	10 50 26.5	11.977	19	4 21 33.97	2.1933	18 48 16.3	7.657
20	2 39 14.23	2.1641	11 2 23.0	11.906	20	4 23 45.59	2.1940	18 55 52.6	7.552
21	2 41 24.08	2.1643	11 14 15.2	11.834	21	4 25 57.25	2.1947	19 3 22.5	7.446
22	2 43 33.95	2.1647	11 26 3.1	11.762	22	4 28 8.95	2.1953	19 10 46.1	7.339
23	2 45 43.85	2.1651	11 37 46.6	11.687	23	4 30 20.69	2.1959	19 18 3.2	7.232
24	2 47 53.76	2.1654	N. 11 49 25.5	11.611	24	4 32 32.46	2.1965	N. 19 25 14.0	7.127

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 5.					TUESDAY 7.				
0	4 32 32.46	2.1965	N.19 25 14.0	7.127	0	6 18 13.28	2.1954	N.22 58 40.4	1.709
1	4 34 44.27	2.1971	19 32 18.4	7.089	1	6 20 24.98	2.1946	23 0 19.5	1.594
2	4 36 56.11	2.1977	19 39 16.3	6.911	2	6 22 36.63	2.1937	23 1 51.7	1.479
3	4 39 7.99	2.1982	19 46 7.7	6.802	3	6 24 48.22	2.1927	23 3 17.0	1.365
4	4 41 19.90	2.1987	19 52 52.6	6.694	4	6 26 59.76	2.1918	23 4 35.5	1.251
5	4 43 31.84	2.1992	19 59 31.0	6.585	5	6 29 11.24	2.1908	23 5 47.1	1.137
6	4 45 43.81	2.1997	20 6 2.8	6.476	6	6 31 22.66	2.1898	23 6 51.9	1.022
7	4 47 55.81	2.2002	20 12 28.1	6.367	7	6 33 34.02	2.1888	23 7 49.8	0.908
8	4 50 7.83	2.2007	20 18 46.8	6.257	8	6 35 45.32	2.1877	23 8 40.9	0.795
9	4 52 19.89	2.2012	20 24 58.9	6.146	9	6 37 56.55	2.1867	23 9 25.2	0.682
10	4 54 31.97	2.2015	20 31 4.3	6.035	10	6 40 7.72	2.1855	23 10 2.7	0.567
11	4 56 44.07	2.2018	20 37 3.1	5.925	11	6 42 18.81	2.1843	23 10 33.3	0.454
12	4 58 56.19	2.2022	20 42 55.3	5.814	12	6 44 29.83	2.1831	23 10 57.2	0.342
13	5 1 8.33	2.2026	20 48 40.8	5.702	13	6 46 40.78	2.1817	23 11 14.3	0.228
14	5 3 20.50	2.2030	20 54 19.6	5.591	14	6 48 51.64	2.1804	23 11 24.6	0.116
15	5 5 32.69	2.2032	20 59 51.7	5.478	15	6 51 2.43	2.1792	23 11 28.2	+0.003
16	5 7 44.89	2.2034	21 5 17.0	5.366	16	6 53 13.14	2.1778	23 11 25.0	-0.109
17	5 9 57.10	2.2037	21 10 35.6	5.254	17	6 55 23.77	2.1764	23 11 15.1	0.221
18	5 12 9.33	2.2039	21 15 47.5	5.142	18	6 57 34.31	2.1749	23 10 58.5	0.333
19	5 14 21.57	2.2041	21 20 52.6	5.028	19	6 59 44.76	2.1734	23 10 35.1	0.445
20	5 16 33.82	2.2042	21 25 50.9	4.915	20	7 1 55.12	2.1719	23 10 5.1	0.556
21	5 18 46.08	2.2043	21 30 42.4	4.802	21	7 4 5.39	2.1704	23 9 28.4	0.667
22	5 20 58.34	2.2044	21 35 27.1	4.688	22	7 6 15.57	2.1689	23 8 45.0	0.778
23	5 23 10.61	2.2046	N.21 40 5.0	4.575	23	7 8 25.66	2.1672	N.23 7 55.0	0.889
MONDAY 6.					WEDNESDAY 8.				
0	5 25 22.89	2.2047	N.21 44 36.1	4.462	0	7 10 35.64	2.1656	N.23 6 58.3	1.000
1	5 27 35.17	2.2046	21 49 0.4	4.347	1	7 12 45.53	2.1640	23 5 55.0	1.110
2	5 29 47.44	2.2045	21 53 17.8	4.232	2	7 14 55.32	2.1622	23 4 45.1	1.219
3	5 31 59.71	2.2045	21 57 28.3	4.118	3	7 17 5.00	2.1605	23 3 28.7	1.329
4	5 34 11.98	2.2044	22 1 32.0	4.005	4	7 19 14.58	2.1588	23 2 5.6	1.439
5	5 36 24.24	2.2043	22 5 28.9	3.890	5	7 21 24.06	2.1570	23 0 36.0	1.547
6	5 38 36.50	2.2042	22 9 18.8	3.775	6	7 23 33.42	2.1552	22 58 59.9	1.656
7	5 40 48.74	2.2039	22 13 1.9	3.661	7	7 25 42.68	2.1534	22 57 17.3	1.764
8	5 43 0.97	2.2037	22 16 38.1	3.547	8	7 27 51.83	2.1515	22 55 28.2	1.872
9	5 45 13.19	2.2035	22 20 7.5	3.432	9	7 30 0.86	2.1496	22 53 32.6	1.981
10	5 47 25.39	2.2032	22 23 29.9	3.317	10	7 32 9.78	2.1477	22 51 30.5	2.088
11	5 49 37.57	2.2028	22 26 45.5	3.202	11	7 34 18.58	2.1457	22 49 22.0	2.195
12	5 51 49.73	2.2025	22 29 54.2	3.087	12	7 36 27.26	2.1437	22 47 7.1	2.302
13	5 54 1.87	2.2021	22 32 56.0	2.972	13	7 38 35.82	2.1417	22 44 45.8	2.408
14	5 56 13.98	2.2017	22 35 50.8	2.857	14	7 40 44.27	2.1397	22 42 18.1	2.515
15	5 58 26.07	2.2012	22 38 38.8	2.742	15	7 42 52.59	2.1377	22 39 44.0	2.621
16	6 0 38.12	2.2007	22 41 19.9	2.627	16	7 45 0.79	2.1356	22 37 3.6	2.726
17	6 2 50.15	2.2002	22 43 54.1	2.512	17	7 47 8.86	2.1334	22 34 16.9	2.831
18	6 5 2.14	2.1996	22 46 21.4	2.397	18	7 49 16.80	2.1313	22 31 23.9	2.935
19	6 7 14.10	2.1990	22 48 41.8	2.282	19	7 51 24.62	2.1292	22 28 24.7	3.038
20	6 9 26.02	2.1985	22 50 55.3	2.167	20	7 53 32.30	2.1270	22 25 19.3	3.142
21	6 11 37.90	2.1977	22 53 1.9	2.052	21	7 55 39.86	2.1249	22 22 7.6	3.247
22	6 13 49.74	2.1969	22 55 1.6	1.937	22	7 57 47.29	2.1227	22 18 49.7	3.350
23	6 16 1.53	2.1962	22 56 54.4	1.823	23	7 59 54.58	2.1204	22 15 25.6	3.452
24	6 18 13.28	2.1954	N.22 58 40.4	1.709	24	8 2 1.74	2.1182	N.22 11 55.4	3.554

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 9.					SATURDAY 11.				
0	8 2 1.74	2.1182	N. 22 11 55.4	3.554	0	9 40 57.13	2.0036	N. 17 32 11.5	7.911
1	8 4 8.76	2.1159	22 8 19.1	3.656	1	9 42 57.28	2.0014	17 24 14.5	7.989
2	8 6 15.65	2.1137	22 4 36.7	3.757	2	9 44 57.30	1.9992	17 16 12.8	8.067
3	8 8 22.40	2.1114	22 0 48.2	3.859	3	9 46 57.18	1.9969	17 8 6.5	8.143
4	8 10 29.02	2.1091	21 56 53.6	3.959	4	9 48 56.93	1.9947	16 59 55.6	8.220
5	8 12 35.49	2.1067	21 52 53.1	4.059	5	9 50 56.55	1.9926	16 51 40.1	8.297
6	8 14 41.83	2.1044	21 48 46.5	4.159	6	9 52 56.04	1.9905	16 43 20.0	8.372
7	8 16 48.02	2.1021	21 44 34.0	4.257	7	9 54 55.41	1.9884	16 34 55.5	8.446
8	8 18 54.08	2.0997	21 40 15.6	4.357	8	9 56 54.65	1.9863	16 26 26.5	8.521
9	8 20 59.99	2.0973	21 35 51.2	4.455	9	9 58 53.77	1.9842	16 17 53.0	8.594
10	8 23 5.76	2.0950	21 31 21.0	4.552	10	10 0 52.76	1.9821	16 9 15.2	8.667
11	8 25 11.39	2.0926	21 26 44.9	4.651	11	10 2 51.63	1.9802	16 0 33.0	8.739
12	8 27 16.87	2.0902	21 22 2.9	4.748	12	10 4 50.38	1.9782	15 51 46.5	8.811
13	8 29 22.21	2.0877	21 17 15.1	4.844	13	10 6 49.01	1.9762	15 42 55.7	8.882
14	8 31 27.40	2.0853	21 12 21.6	4.940	14	10 8 47.52	1.9742	15 34 0.6	8.953
15	8 33 32.45	2.0829	21 7 22.3	5.036	15	10 10 45.91	1.9722	15 25 1.3	9.023
16	8 35 37.35	2.0805	21 2 17.3	5.131	16	10 12 44.19	1.9703	15 15 57.8	9.092
17	8 37 42.11	2.0781	20 57 6.6	5.226	17	10 14 42.35	1.9684	15 6 50.2	9.162
18	8 39 46.72	2.0756	20 51 50.2	5.320	18	10 16 40.40	1.9667	14 57 38.4	9.230
19	8 41 51.18	2.0732	20 46 28.2	5.413	19	10 18 38.35	1.9648	14 48 22.6	9.297
20	8 43 55.50	2.0707	20 41 0.6	5.507	20	10 20 36.18	1.9630	14 39 2.7	9.365
21	8 45 59.67	2.0683	20 35 27.4	5.600	21	10 22 33.91	1.9612	14 29 38.8	9.432
22	8 48 3.70	2.0658	20 29 48.6	5.692	22	10 24 31.53	1.9595	14 20 10.9	9.497
23	8 50 7.57	2.0633	N. 20 24 4.3	5.784	23	10 26 29.05	1.9578	N. 14 10 39.1	9.562
FRIDAY 10.					SUNDAY 12.				
0	8 52 11.30	2.0609	N. 20 18 14.5	5.876	0	10 28 26.47	1.9562	N. 14 1 3.4	9.627
1	8 54 14.88	2.0584	20 12 19.2	5.967	1	10 30 23.79	1.9545	13 51 23.8	9.692
2	8 56 18.31	2.0560	20 6 18.5	6.057	2	10 32 21.01	1.9528	13 41 40.4	9.755
3	8 58 21.60	2.0536	20 0 12.4	6.146	3	10 34 18.13	1.9512	13 31 53.2	9.818
4	9 0 24.74	2.0511	19 54 1.0	6.235	4	10 36 15.16	1.9497	13 22 2.2	9.881
5	9 2 27.73	2.0486	19 47 44.2	6.325	5	10 38 12.10	1.9482	13 12 7.5	9.942
6	9 4 30.57	2.0462	19 41 22.0	6.413	6	10 40 8.95	1.9467	13 2 9.1	10.003
7	9 6 33.27	2.0437	19 34 54.6	6.500	7	10 42 5.71	1.9453	12 52 7.1	10.064
8	9 8 35.82	2.0413	19 28 22.0	6.587	8	10 44 2.39	1.9440	12 42 1.4	10.124
9	9 10 38.23	2.0389	19 21 44.1	6.675	9	10 45 58.99	1.9426	12 31 52.2	10.182
10	9 12 40.49	2.0364	19 15 1.0	6.761	10	10 47 55.50	1.9412	12 21 39.5	10.242
11	9 14 42.60	2.0340	19 8 12.8	6.846	11	10 49 51.93	1.9399	12 11 23.2	10.300
12	9 16 44.57	2.0317	19 1 19.5	6.931	12	10 51 48.29	1.9387	12 1 3.5	10.357
13	9 18 46.40	2.0292	18 54 21.1	7.016	13	10 53 44.57	1.9374	11 50 40.4	10.414
14	9 20 48.08	2.0267	18 47 17.6	7.100	14	10 55 40.78	1.9362	11 40 13.8	10.471
15	9 22 49.61	2.0244	18 40 9.1	7.183	15	10 57 36.92	1.9351	11 29 43.9	10.526
16	9 24 51.01	2.0221	18 32 55.6	7.267	16	10 59 32.99	1.9340	11 19 10.7	10.580
17	9 26 52.26	2.0197	18 25 37.1	7.349	17	11 1 29.00	1.9329	11 8 34.3	10.634
18	9 28 53.38	2.0174	18 18 13.7	7.431	18	11 3 24.94	1.9318	10 57 54.6	10.688
19	9 30 54.35	2.0150	18 10 45.4	7.512	19	11 5 20.82	1.9308	10 47 11.7	10.741
20	9 32 55.18	2.0127	18 3 12.2	7.593	20	11 7 16.64	1.9299	10 36 25.7	10.793
21	9 34 55.87	2.0104	17 55 34.2	7.673	21	11 9 12.41	1.9290	10 25 36.5	10.845
22	9 36 56.43	2.0082	17 47 51.4	7.753	22	11 11 8.12	1.9281	10 14 44.3	10.895
23	9 38 56.85	2.0058	17 40 3.8	7.832	23	11 13 3.78	1.9272	10 3 49.1	10.946
24	9 40 57.13	2.0036	N. 17 32 11.5	7.911	24	11 14 59.39	1.9264	N. 9 52 50.8	10.996

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 13.					WEDNESDAY 15.				
0	11 14 59.39	1.9264	N. 9 52 50.8	11.996	0	12 47 24.22	1.9428	N. 0 21 25.1	12.521
1	11 16 54.95	1.9257	9 41 49.6	11.044	1	12 49 20.84	1.9444	N. 0 8 53.5	12.533
2	11 18 50.47	1.9250	9 30 45.5	11.093	2	12 51 17.55	1.9460	S. 0 3 38.9	12.545
3	11 20 45.95	1.9243	9 19 38.5	11.141	3	12 53 14.36	1.9477	0 16 11.9	12.554
4	11 22 41.39	1.9237	9 8 28.6	11.187	4	12 55 11.27	1.9494	0 28 45.4	12.563
5	11 24 36.79	1.9231	8 57 16.0	11.233	5	12 57 8.29	1.9512	0 41 19.5	12.572
6	11 26 32.16	1.9225	8 46 0.6	11.279	6	12 59 5.42	1.9531	0 53 54.1	12.580
7	11 28 27.49	1.9220	8 34 42.5	11.323	7	13 1 2.66	1.9550	1 6 29.1	12.587
8	11 30 22.80	1.9217	8 23 21.8	11.367	8	13 3 0.02	1.9569	1 19 4.5	12.593
9	11 32 18.09	1.9212	8 11 58.4	11.412	9	13 4 57.49	1.9589	1 31 40.2	12.597
10	11 34 13.35	1.9208	8 0 32.4	11.455	10	13 6 55.09	1.9610	1 44 16.2	12.601
11	11 36 8.59	1.9205	7 49 3.8	11.497	11	13 8 52.81	1.9631	1 56 52.3	12.603
12	11 38 3.81	1.9202	7 37 32.8	11.537	12	13 10 50.66	1.9652	2 9 28.6	12.606
13	11 39 59.02	1.9200	7 25 59.3	11.578	13	13 12 48.64	1.9675	2 22 5.0	12.607
14	11 41 54.21	1.9198	7 14 23.4	11.618	14	13 14 46.76	1.9697	2 34 41.4	12.607
15	11 43 49.40	1.9197	7 2 45.1	11.658	15	13 16 45.01	1.9720	2 47 17.8	12.607
16	11 45 44.58	1.9196	6 51 4.5	11.697	16	13 18 43.40	1.9744	2 59 54.2	12.605
17	11 47 39.75	1.9196	6 39 21.5	11.734	17	13 20 41.94	1.9769	3 12 30.4	12.601
18	11 49 34.93	1.9196	6 27 36.4	11.771	18	13 22 40.63	1.9793	3 25 6.3	12.597
19	11 51 30.10	1.9196	6 15 49.0	11.807	19	13 24 39.46	1.9818	3 37 42.0	12.592
20	11 53 25.28	1.9197	6 3 59.5	11.843	20	13 26 38.45	1.9845	3 50 17.4	12.587
21	11 55 20.47	1.9199	5 52 7.8	11.878	21	13 28 37.60	1.9871	4 2 52.4	12.580
22	11 57 15.67	1.9201	5 40 14.1	11.912	22	13 30 36.90	1.9898	4 15 27.0	12.572
23	11 59 10.88	1.9203	N. 5 28 18.4	11.945	23	13 32 36.37	1.9926	S. 4 28 1.1	12.563
TUESDAY 14.					THURSDAY 16.				
0	12 1 6.11	1.9207	N. 5 16 20.7	11.977	0	13 34 36.01	1.9954	S. 4 40 34.6	12.553
1	12 3 1.36	1.9210	5 4 21.1	12.009	1	13 36 35.82	1.9982	4 53 7.5	12.542
2	12 4 56.63	1.9213	4 52 19.6	12.041	2	13 38 35.80	2.0011	5 5 39.7	12.530
3	12 6 51.92	1.9217	4 40 16.2	12.072	3	13 40 35.95	2.0041	5 18 11.1	12.517
4	12 8 47.24	1.9222	4 28 11.0	12.101	4	13 42 36.29	2.0071	5 30 41.7	12.503
5	12 10 42.59	1.9228	4 16 4.1	12.129	5	13 44 36.80	2.0101	5 43 11.5	12.488
6	12 12 37.98	1.9234	4 3 55.5	12.157	6	13 46 37.50	2.0132	5 55 40.3	12.472
7	12 14 33.40	1.9241	3 51 45.3	12.184	7	13 48 38.39	2.0164	6 8 8.1	12.455
8	12 16 28.87	1.9247	3 39 33.4	12.211	8	13 50 39.47	2.0197	6 20 34.9	12.437
9	12 18 24.37	1.9255	3 27 20.0	12.236	9	13 52 40.75	2.0229	6 33 0.5	12.417
10	12 20 19.93	1.9263	3 15 5.1	12.261	10	13 54 42.22	2.0262	6 45 25.0	12.397
11	12 22 15.53	1.9271	3 2 48.7	12.285	11	13 56 43.89	2.0296	6 57 48.2	12.375
12	12 24 11.18	1.9280	2 50 30.9	12.308	12	13 58 45.77	2.0330	7 10 10.0	12.352
13	12 26 6.89	1.9290	2 38 11.7	12.331	13	14 0 47.85	2.0365	7 22 30.4	12.328
14	12 28 2.66	1.9300	2 25 51.2	12.352	14	14 2 50.15	2.0401	7 34 49.4	12.304
15	12 29 58.49	1.9310	2 13 29.5	12.372	15	14 4 52.66	2.0436	7 47 6.9	12.277
16	12 31 54.38	1.9321	2 1 6.5	12.392	16	14 6 55.38	2.0472	7 59 22.7	12.250
17	12 33 50.34	1.9332	1 48 42.4	12.411	17	14 8 58.32	2.0508	8 11 36.9	12.222
18	12 35 46.37	1.9345	1 36 17.2	12.429	18	14 11 1.48	2.0546	8 23 49.4	12.192
19	12 37 42.48	1.9357	1 23 50.9	12.447	19	14 13 4.87	2.0584	8 36 0.0	12.162
20	12 39 38.66	1.9370	1 11 23.5	12.464	20	14 15 8.49	2.0622	8 48 8.8	12.130
21	12 41 34.92	1.9384	0 58 55.2	12.479	21	14 17 12.33	2.0660	9 0 15.6	12.097
22	12 43 31.27	1.9398	0 46 26.0	12.493	22	14 19 16.41	2.0699	9 12 20.4	12.063
23	12 45 27.70	1.9412	0 33 56.0	12.507	23	14 21 20.72	2.0738	9 24 23.2	12.028
24	12 47 24.22	1.9428	N. 0 21 25.1	12.521	24	14 23 25.27	2.0778	S. 9 36 23.8	11.992

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 17.					SUNDAY 19.				
0	14 23 25.27	2.0778	S. 9 36 23.8	11.992	0	16 8 27.00	2.3077	S. 18 6 34.1	8.777
1	14 25 30.06	2.0818	9 48 22.2	11.954	1	16 10 45.62	2.3128	18 15 17.8	8.678
2	14 27 35.09	2.0859	10 0 18.3	11.915	2	16 13 4.54	2.3179	18 23 55.5	8.578
3	14 29 40.37	2.0902	10 12 12.0	11.875	3	16 15 23.77	2.3231	18 32 27.2	8.478
4	14 31 45.91	2.0943	10 24 3.3	11.833	4	16 17 43.31	2.3282	18 40 52.9	8.376
5	14 33 51.69	2.0984	10 35 52.0	11.791	5	16 20 3.15	2.3332	18 49 12.3	8.272
6	14 35 57.72	2.1027	10 47 38.2	11.748	6	16 22 23.29	2.3382	18 57 25.5	8.167
7	14 38 4.02	2.1071	10 59 21.8	11.703	7	16 24 43.74	2.3434	19 5 32.4	8.062
8	14 40 10.57	2.1113	11 11 2.6	11.657	8	16 27 4.50	2.3484	19 13 32.9	7.955
9	14 42 17.38	2.1157	11 22 40.6	11.609	9	16 29 25.55	2.3533	19 21 27.0	7.847
10	14 44 24.46	2.1202	11 34 15.7	11.561	10	16 31 46.90	2.3583	19 29 14.5	7.737
11	14 46 31.81	2.1247	11 45 47.9	11.512	11	16 34 8.55	2.3633	19 36 55.4	7.626
12	14 48 39.42	2.1291	11 57 17.1	11.461	12	16 36 30.50	2.3682	19 44 29.6	7.514
13	14 50 47.30	2.1337	12 8 43.2	11.408	13	16 38 52.74	2.3732	19 51 57.1	7.401
14	14 52 55.46	2.1382	12 20 6.1	11.355	14	16 41 15.28	2.3781	19 59 17.7	7.286
15	14 55 3.89	2.1428	12 31 25.8	11.300	15	16 43 38.11	2.3829	20 6 31.4	7.171
16	14 57 12.60	2.1474	12 42 42.1	11.244	16	16 46 1.23	2.3877	20 13 38.2	7.054
17	14 59 21.58	2.1521	12 53 55.1	11.187	17	16 48 24.63	2.3924	20 20 37.9	6.936
18	15 1 30.85	2.1568	13 5 4.6	11.128	18	16 50 48.32	2.3971	20 27 30.5	6.817
19	15 3 40.40	2.1616	13 16 10.5	11.068	19	16 53 12.28	2.4017	20 34 16.0	6.697
20	15 5 50.24	2.1664	13 27 12.8	11.007	20	16 55 36.53	2.4064	20 40 54.2	6.576
21	15 8 0.37	2.1712	13 38 11.4	10.946	21	16 58 1.05	2.4110	20 47 25.1	6.454
22	15 10 10.78	2.1759	13 49 6.3	10.882	22	17 0 25.85	2.4156	20 53 48.7	6.331
23	15 12 21.48	2.1808	S. 13 59 57.3	10.817	23	17 2 50.92	2.4201	S. 21 0 4.8	6.206
SATURDAY 18.					MONDAY 20.				
0	15 14 32.48	2.1857	S. 14 10 44.4	10.752	0	17 5 16.26	2.4245	S. 21 6 13.4	6.080
1	15 16 43.77	2.1906	14 21 27.5	10.684	1	17 7 41.86	2.4289	21 12 14.4	5.953
2	15 18 55.35	2.1955	14 32 6.5	10.615	2	17 10 7.73	2.4333	21 18 7.8	5.826
3	15 21 7.23	2.2005	14 42 41.3	10.545	3	17 12 33.86	2.4376	21 23 53.5	5.697
4	15 23 19.41	2.2055	14 53 11.9	10.473	4	17 15 0.24	2.4417	21 29 31.5	5.567
5	15 25 31.89	2.2105	15 3 38.1	10.401	5	17 17 26.87	2.4459	21 35 1.6	5.436
6	15 27 44.67	2.2155	15 14 0.0	10.327	6	17 19 53.75	2.4500	21 40 23.8	5.304
7	15 29 57.75	2.2205	15 24 17.4	10.252	7	17 22 20.87	2.4541	21 45 38.1	5.172
8	15 32 11.13	2.2256	15 34 30.3	10.176	8	17 24 48.24	2.4581	21 50 44.4	5.038
9	15 34 24.82	2.2307	15 44 38.5	10.097	9	17 27 15.84	2.4619	21 55 42.7	4.904
10	15 36 38.81	2.2357	15 54 42.0	10.019	10	17 29 43.67	2.4657	22 0 32.9	4.768
11	15 38 53.11	2.2408	16 4 40.8	9.939	11	17 32 11.73	2.4696	22 5 14.9	4.632
12	15 41 7.71	2.2459	16 14 34.7	9.857	12	17 34 40.02	2.4733	22 9 48.7	4.494
13	15 43 22.62	2.2511	16 24 23.7	9.774	13	17 37 8.53	2.4769	22 14 14.2	4.356
14	15 45 37.84	2.2562	16 34 7.6	9.689	14	17 39 37.25	2.4804	22 18 31.4	4.217
15	15 47 53.36	2.2612	16 43 46.4	9.604	15	17 42 6.18	2.4838	22 22 40.3	4.077
16	15 50 9.19	2.2665	16 53 20.1	9.517	16	17 44 35.31	2.4873	22 26 40.7	3.937
17	15 52 25.34	2.2717	17 2 48.5	9.429	17	17 47 4.65	2.4907	22 30 32.7	3.796
18	15 54 41.79	2.2767	17 12 11.6	9.340	18	17 49 34.19	2.4938	22 34 16.2	3.653
19	15 56 58.55	2.2819	17 21 29.3	9.249	19	17 52 3.91	2.4969	22 37 51.1	3.510
20	15 59 15.62	2.2871	17 30 41.5	9.157	20	17 54 33.82	2.5001	22 41 17.4	3.366
21	16 1 33.00	2.2922	17 39 48.2	9.064	21	17 57 3.92	2.5031	22 44 35.0	3.222
22	16 3 50.69	2.2974	17 48 49.2	8.969	22	17 59 34.19	2.5059	22 47 44.0	3.077
23	16 6 8.69	2.3026	17 57 44.5	8.874	23	18 2 4.63	2.5087	22 50 44.2	2.931
24	16 8 27.00	2.3077	S. 18 6 34.1	8.777	24	18 4 35.23	2.5113	S. 22 53 35.7	2.785

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 21.					THURSDAY 23.				
0	18 4 35.23	2.5113	S. 22 53 35.7	2.785	0	20 6 20.92	2.5230	S. 22 12 29.8	4.498
1	18 7 5.99	2.5140	22 56 18.4	2.637	1	20 8 52.24	2.5208	22 7 55.5	4.645
2	18 9 36.91	2.5165	22 58 52.2	2.490	2	20 11 23.42	2.5186	22 3 12.4	4.791
3	18 12 7.97	2.5189	23 1 17.2	2.342	3	20 13 54.47	2.5163	21 58 20.6	4.936
4	18 14 39.18	2.5213	23 3 33.2	2.192	4	20 16 25.38	2.5139	21 53 20.1	5.080
5	18 17 10.53	2.5236	23 5 40.3	2.044	5	20 18 56.14	2.5114	21 48 11.0	5.224
6	18 19 42.01	2.5257	23 7 38.5	1.895	6	20 21 26.75	2.5089	21 42 53.2	5.367
7	18 22 13.61	2.5277	23 9 27.7	1.744	7	20 23 57.21	2.5065	21 37 26.9	5.510
8	18 24 45.33	2.5296	23 11 7.8	1.593	8	20 26 27.51	2.5036	21 31 52.0	5.652
9	18 27 17.16	2.5314	23 12 38.9	1.443	9	20 28 57.64	2.5008	21 26 8.7	5.792
10	18 29 49.10	2.5332	23 14 1.0	1.292	10	20 31 27.61	2.4981	21 20 17.0	5.932
11	18 32 21.14	2.5348	23 15 13.9	1.139	11	20 33 57.41	2.4952	21 14 16.9	6.072
12	18 34 53.28	2.5363	23 16 17.7	0.987	12	20 36 27.03	2.4922	21 8 8.4	6.210
13	18 37 25.50	2.5378	23 17 12.3	0.834	13	20 38 56.47	2.4892	21 1 51.7	6.347
14	18 39 57.81	2.5392	23 17 57.8	0.682	14	20 41 25.73	2.4861	20 55 26.7	6.484
15	18 42 30.20	2.5403	23 18 34.1	0.529	15	20 43 54.80	2.4829	20 48 53.6	6.620
16	18 45 2.65	2.5414	23 19 1.3	0.376	16	20 46 23.68	2.4797	20 42 12.3	6.755
17	18 47 35.17	2.5424	23 19 19.2	0.222	17	20 48 52.37	2.4765	20 35 23.0	6.888
18	18 50 7.74	2.5433	23 19 27.9	-0.068	18	20 51 20.86	2.4732	20 28 25.7	7.022
19	18 52 40.37	2.5442	23 19 27.4	+0.085	19	20 53 49.15	2.4698	20 21 20.4	7.153
20	18 55 13.04	2.5448	23 19 17.7	0.239	20	20 56 17.24	2.4664	20 14 7.3	7.284
21	18 57 45.75	2.5454	23 18 58.7	0.393	21	20 58 45.12	2.4629	20 6 46.3	7.415
22	19 0 18.49	2.5459	23 18 30.5	0.547	22	21 1 12.79	2.4594	19 59 17.5	7.543
23	19 2 51.26	2.5463	S. 23 17 53.0	0.702	23	21 3 40.25	2.4559	S. 19 51 41.1	7.671
WEDNESDAY 22.					FRIDAY 24.				
0	19 5 24.05	2.5466	S. 23 17 6.3	0.856	0	21 6 7.50	2.4523	S. 19 43 57.0	7.798
1	19 7 56.85	2.5467	23 16 10.3	1.010	1	21 8 34.53	2.4487	19 36 5.3	7.924
2	19 10 29.66	2.5468	23 15 5.1	1.164	2	21 11 1.34	2.4450	19 28 6.1	8.048
3	19 13 2.47	2.5468	23 13 50.6	1.319	3	21 13 27.93	2.4413	19 19 59.5	8.172
4	19 15 35.28	2.5467	23 12 26.8	1.472	4	21 15 54.30	2.4376	19 11 45.5	8.295
5	19 18 8.07	2.5464	23 10 53.9	1.626	5	21 18 20.44	2.4337	19 3 24.1	8.417
6	19 20 40.85	2.5461	23 9 11.7	1.781	6	21 20 46.35	2.4300	18 54 55.5	8.536
7	19 23 13.60	2.5456	23 7 20.2	1.934	7	21 23 12.04	2.4262	18 46 19.8	8.655
8	19 25 46.32	2.5451	23 5 19.6	2.087	8	21 25 37.49	2.4223	18 37 36.9	8.774
9	19 28 19.01	2.5444	23 3 9.7	2.241	9	21 28 2.72	2.4185	18 28 46.9	8.891
10	19 30 51.65	2.5436	23 0 50.7	2.393	10	21 30 27.71	2.4145	18 19 50.0	9.007
11	19 33 24.24	2.5427	22 58 22.5	2.547	11	21 32 52.46	2.4106	18 10 46.1	9.122
12	19 35 56.78	2.5418	22 55 45.1	2.699	12	21 35 16.98	2.4067	18 1 35.4	9.234
13	19 38 29.26	2.5407	22 52 58.6	2.852	13	21 37 41.26	2.4027	17 52 18.0	9.346
14	19 41 1.67	2.5396	22 50 2.9	3.004	14	21 40 5.31	2.3987	17 42 53.9	9.457
15	19 43 34.01	2.5384	22 46 58.1	3.156	15	21 42 29.11	2.3947	17 33 23.2	9.567
16	19 46 6.28	2.5371	22 43 44.2	3.307	16	21 44 52.68	2.3908	17 23 45.9	9.675
17	19 48 38.46	2.5356	22 40 21.3	3.457	17	21 47 16.01	2.3867	17 14 2.2	9.782
18	19 51 10.55	2.5340	22 36 49.4	3.607	18	21 49 39.09	2.3827	17 4 12.1	9.887
19	19 53 42.54	2.5324	22 33 8.5	3.757	19	21 52 1.93	2.3787	16 54 15.7	9.992
20	19 56 14.44	2.5307	22 29 18.6	3.907	20	21 54 24.54	2.3747	16 44 13.1	10.096
21	19 58 46.23	2.5289	22 25 19.7	4.056	21	21 56 46.90	2.3707	16 34 4.2	10.198
22	20 1 17.91	2.5271	22 21 11.9	4.203	22	21 59 9.02	2.3667	16 23 49.3	10.298
23	20 3 49.48	2.5251	22 16 55.3	4.351	23	22 1 30.90	2.3626	16 13 28.4	10.397
24	20 6 20.92	2.5230	S. 22 12 29.8	4.498	24	22 3 52.53	2.3585	S. 16 3 1.6	10.496

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 25.					MONDAY 27.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	22 3 52.53	2.3585	S. 16 3 1.6	10.496	0	23 52 50.03	2.1942	S. 6 12 10.6	13.585
1	22 6 13.92	2.3546	15 52 28.9	10.592	1	23 55 1.61	2.1918	5 58 34.6	13.615
2	22 8 35.08	2.3506	15 41 50.5	10.687	2	23 57 13.05	2.1894	5 44 56.8	13.644
3	22 10 55.99	2.3466	15 31 6.4	10.782	3	23 59 24.34	2.1871	5 31 17.3	13.671
4	22 13 16.67	2.3426	15 20 16.7	10.875	4	0 1 35.50	2.1848	5 17 36.3	13.696
5	22 15 37.10	2.3385	15 9 21.4	10.967	5	0 3 46.52	2.1826	5 3 53.8	13.721
6	22 17 57.29	2.3345	14 58 20.7	11.056	6	0 5 57.41	2.1804	4 50 9.8	13.744
7	22 20 17.25	2.3307	14 47 14.7	11.145	7	0 8 8.17	2.1783	4 36 24.5	13.765
8	22 22 36.97	2.3267	14 36 3.3	11.232	8	0 10 18.81	2.1762	4 22 38.0	13.785
9	22 24 56.46	2.3228	14 24 46.8	11.318	9	0 12 29.32	2.1742	4 8 50.3	13.805
10	22 27 15.71	2.3188	14 13 25.1	11.404	10	0 14 39.72	2.1723	3 55 1.4	13.828
11	22 29 34.72	2.3149	14 1 58.3	11.487	11	0 16 50.00	2.1703	3 41 11.6	13.857
12	22 31 53.50	2.3111	13 50 26.6	11.569	12	0 19 0.16	2.1684	3 27 20.9	13.882
13	22 34 12.05	2.3072	13 38 50.0	11.649	13	0 21 10.21	2.1667	3 13 29.3	13.866
14	22 36 30.37	2.3034	13 27 8.7	11.728	14	0 23 20.16	2.1650	2 59 37.0	13.877
15	22 38 48.46	2.2997	13 15 22.6	11.807	15	0 25 30.01	2.1632	2 45 44.0	13.887
16	22 41 6.33	2.2959	13 3 31.9	11.882	16	0 27 39.75	2.1616	2 31 50.5	13.897
17	22 43 23.97	2.2921	12 51 36.7	11.957	17	0 29 49.40	2.1600	2 17 56.4	13.905
18	22 45 41.38	2.2883	12 39 37.0	12.032	18	0 31 58.95	2.1584	2 4 1.9	13.912
19	22 47 58.57	2.2847	12 27 32.9	12.104	19	0 34 8.41	2.1570	1 50 7.0	13.917
20	22 50 15.54	2.2810	12 15 24.5	12.175	20	0 36 17.79	2.1556	1 36 11.9	13.920
21	22 52 32.29	2.2774	12 3 11.9	12.244	21	0 38 27.08	2.1542	1 22 16.6	13.922
22	22 54 48.83	2.2738	11 50 55.2	12.312	22	0 40 36.29	2.1528	1 8 21.3	13.922
23	22 57 5.15	2.2702	S. 11 38 34.5	12.378	23	0 42 45.42	2.1515	S. 0 54 25.9	13.922
SUNDAY 26.					TUESDAY 28.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	22 59 21.25	2.2667	S. 11 26 9.8	12.444	0	0 44 54.47	2.1503	S. 0 40 30.6	13.921
1	23 1 37.15	2.2632	11 13 41.2	12.507	1	0 47 3.45	2.1492	0 26 35.4	13.917
2	23 3 52.83	2.2597	11 1 8.9	12.569	2	0 49 12.37	2.1482	S. 0 12 40.5	13.912
3	23 6 8.31	2.2562	10 48 32.9	12.631	3	0 51 21.23	2.1471	N. 0 1 14.1	13.907
4	23 8 23.58	2.2529	10 35 53.2	12.691	4	0 53 30.02	2.1460	0 15 8.4	13.900
5	23 10 38.66	2.2496	10 23 10.0	12.749	5	0 55 38.75	2.1450	0 29 2.1	13.892
6	23 12 53.53	2.2462	10 10 23.3	12.806	6	0 57 47.42	2.1442	0 42 55.4	13.882
7	23 15 8.20	2.2429	9 57 33.3	12.861	7	0 59 56.05	2.1433	0 56 47.9	13.870
8	23 17 22.68	2.2397	9 44 40.0	12.915	8	1 2 4.62	2.1425	1 10 39.8	13.858
9	23 19 36.97	2.2366	9 31 43.5	12.967	9	1 4 13.15	2.1417	1 24 30.9	13.845
10	23 21 51.07	2.2334	9 18 43.9	13.018	10	1 6 21.63	2.1410	1 38 21.2	13.830
11	23 24 4.98	2.2303	9 5 41.3	13.068	11	1 8 30.07	2.1403	1 52 10.5	13.813
12	23 26 18.71	2.2272	8 52 35.7	13.117	12	1 10 38.47	2.1397	2 5 58.8	13.796
13	23 28 32.25	2.2242	8 39 27.3	13.163	13	1 12 46.84	2.1392	2 19 46.0	13.777
14	23 30 45.62	2.2213	8 26 16.1	13.209	14	1 14 55.18	2.1387	2 33 32.0	13.756
15	23 32 58.81	2.2183	8 13 2.2	13.252	15	1 17 3.49	2.1382	2 47 16.7	13.734
16	23 35 11.82	2.2154	7 59 45.8	13.295	16	1 19 11.77	2.1378	3 1 0.1	13.712
17	23 37 24.06	2.2127	7 46 26.8	13.337	17	1 21 20.03	2.1375	3 14 42.1	13.687
18	23 39 37.34	2.2099	7 33 5.4	13.377	18	1 23 28.27	2.1372	3 28 22.6	13.662
19	23 41 49.85	2.2072	7 19 41.6	13.415	19	1 25 36.50	2.1371	3 42 1.6	13.636
20	23 44 2.20	2.2045	7 6 15.6	13.452	20	1 27 44.72	2.1368	3 55 38.9	13.607
21	23 46 14.39	2.2018	6 52 47.4	13.487	21	1 29 52.92	2.1366	4 9 14.5	13.578
22	23 48 26.42	2.1992	6 39 17.1	13.522	22	1 32 1.11	2.1365	4 22 48.3	13.548
23	23 50 38.30	2.1967	6 25 44.8	13.554	23	1 34 9.30	2.1365	4 36 20.3	13.517
24	23 52 50.03	2.1942	S. 6 12 10.6	13.585	24	1 36 17.49	2.1364	N. 4 49 50.3	13.483

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 29.					FRIDAY, MAY 1.				
0	h m s	s	N. ° ' "	"	0	h m s	s	N. ° ' "	"
1	36 17.49	2.1364	4 49 50.3	13.483	3	19 32.47	2.1767	14 36 48.7	10.556
2	38 25.67	2.1364	5 3 18.3	13.449					
3	40 33.86	2.1366	5 16 44.2	13.413					
4	42 42.06	2.1367	5 30 7.9	13.377					
5	44 50.26	2.1368	5 43 29.4	13.339					
6	46 58.47	2.1370	5 56 48.6	13.300					
7	49 6.70	2.1372	6 10 5.4	13.260					
8	51 14.94	2.1375	6 23 19.8	13.218					
9	53 23.20	2.1378	6 36 31.6	13.176					
10	55 31.48	2.1382	6 49 40.9	13.132					
11	57 39.79	2.1387	7 2 47.5	13.087					
12	59 48.12	2.1391	7 15 51.3	13.040					
13	1 56.48	2.1396	7 28 52.3	12.992					
14	2 4 4.87	2.1401	7 41 50.4	12.944					
15	2 6 13.29	2.1407	7 54 45.6	12.894					
16	2 8 21.75	2.1413	8 7 37.7	12.843					
17	2 10 30.25	2.1419	8 20 26.8	12.792					
18	2 12 38.78	2.1426	8 33 12.7	12.737					
19	2 14 47.36	2.1433	8 45 55.3	12.682					
20	2 16 55.98	2.1440	8 58 34.6	12.627					
21	2 19 4.64	2.1448	9 11 10.6	12.571					
22	2 21 13.36	2.1457	9 23 43.1	12.513					
23	2 23 22.12	2.1464	9 36 12.2	12.455					
24	2 25 30.93	2.1473	N. 9 48 37.7	12.394					
					PHASES OF THE MOON.				
					☾ First Quarter . . . Apr. 8 4 31.5				
					○ Full Moon 16 4 55.3				
					☾ Last Quarter 23 7 6.7				
					● New Moon 30 3 33.1				
THURSDAY 30.					☾ Apogee Apr. 9 22.4				
0	2 27 39.80	2.1482	N. 10 0 59.5	12.332	☾ Perigee 25 0.3				
1	2 29 48.72	2.1492	10 13 17.6	12.271					
2	2 31 57.70	2.1502	10 25 32.0	12.207					
3	2 34 6.74	2.1512	10 37 42.5	12.142					
4	2 36 15.84	2.1522	10 49 49.1	12.077					
5	2 38 25.00	2.1532	11 1 51.8	12.011					
6	2 40 34.22	2.1542	11 13 50.4	11.943					
7	2 42 43.51	2.1553	11 25 45.0	11.875					
8	2 44 52.86	2.1564	11 37 35.4	11.805					
9	2 47 2.28	2.1576	11 49 21.6	11.735					
10	2 49 11.77	2.1587	12 1 3.6	11.663					
11	2 51 21.33	2.1599	12 12 41.2	11.590					
12	2 53 30.96	2.1611	12 24 14.4	11.516					
13	2 55 40.66	2.1623	12 35 43.1	11.442					
14	2 57 50.44	2.1636	12 47 7.4	11.367					
15	3 0 0.29	2.1648	12 58 27.1	11.289					
16	3 2 10.22	2.1662	13 9 42.1	11.211					
17	3 4 20.23	2.1674	13 20 52.4	11.132					
18	3 6 30.31	2.1687	13 31 58.0	11.053					
19	3 8 40.47	2.1700	13 42 58.8	10.972					
20	3 10 50.71	2.1713	13 53 54.7	10.891					
21	3 13 1.03	2.1727	14 4 45.7	10.809					
22	3 15 11.43	2.1740	14 15 31.8	10.726					
23	3 17 21.91	2.1753	14 26 12.8	10.641					
24	3 19 32.47	2.1767	N. 14 36 48.7	10.556					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	III ^h	P. L. of Diff.	VI ^h	P. L. of Diff.	IX ^h	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
2	SUN	W.	17 39 20	2862	19 12 28	2855	20 45 45	2852	22 19 6	2852
	Pollux	E.	83 11 23	2392	81 27 37	2407	79 44 12	2422	78 1 9	2437
	JUPITER	E.	94 14 48	2375	92 30 38	2390	90 46 49	2405	89 3 22	2420
3	SUN	W.	30 4 41	2889	31 37 14	2901	33 9 32	2913	34 41 34	2927
	Pollux	E.	69 31 25	2518	67 50 37	2535	66 10 12	2552	64 30 10	2569
	JUPITER	E.	80 31 35	2500	78 50 22	2516	77 9 31	2533	75 29 3	2549
4	SUN	W.	42 17 11	3002	43 47 21	3018	45 17 11	3034	46 46 42	3050
	Pollux	E.	56 15 56	2656	54 38 17	2673	53 1 1	2691	51 24 9	2709
	JUPITER	E.	67 12 27	2632	65 34 16	2649	63 56 28	2665	62 19 2	2681
5	SUN	W.	54 9 19	3130	55 36 52	3146	57 4 6	3161	58 31 2	3176
	MARS	W.	11 2 13	3272	12 26 58	3228	13 52 33	3201	15 18 40	3186
	Pollux	E.	43 25 44	2798	41 51 14	2816	40 17 7	2835	38 43 24	2853
	JUPITER	E.	54 17 17	2763	52 42 0	2778	51 7 3	2793	49 32 26	2808
6	SUN	W.	65 41 12	3250	67 6 22	3263	68 31 17	3276	69 55 56	3289
	MARS	W.	22 31 36	3182	23 58 7	3188	25 24 31	3195	26 50 46	3204
	VENUS	W.	21 38 20	3416	23 0 18	3416	24 22 16	3416	25 44 14	3418
	Aldebaran	W.	14 1 18	2956	15 32 26	2955	17 3 35	2957	18 34 42	2960
	Pollux	E.	31 0 50	2949	29 29 34	2970	27 58 44	2993	26 28 22	3016
	JUPITER	E.	41 44 9	2880	40 11 24	2893	38 38 57	2906	37 6 46	2918
	Spica	E.	120 30 21	2911	118 58 16	2923	117 26 27	2935	115 54 53	2946
7	SUN	W.	76 55 34	3348	78 18 50	3359	79 41 53	3369	81 4 44	3379
	MARS	W.	33 59 38	3244	35 24 55	3252	36 50 3	3259	38 15 2	3266
	VENUS	W.	32 33 13	3440	33 54 44	3446	35 16 9	3452	36 37 27	3457
	Aldebaran	W.	26 8 52	2990	27 39 17	2997	29 9 33	3005	30 39 40	3012
	JUPITER	E.	29 29 41	2977	27 58 59	2987	26 28 31	2997	24 58 15	3007
	Spica	E.	108 20 27	2998	106 50 12	3007	105 20 8	3016	103 50 15	3025
8	SUN	W.	87 56 30	3420	89 18 24	3426	90 40 11	3432	92 1 51	3438
	MARS	W.	45 17 50	3300	46 42 1	3306	48 6 5	3311	49 30 3	3316
	VENUS	W.	43 22 24	3484	44 43 5	3488	46 3 42	3493	47 24 14	3497
	Aldebaran	W.	38 8 9	3043	39 37 28	3048	41 6 40	3053	42 35 47	3058
	Spica	E.	96 23 21	3061	94 54 24	3067	93 25 35	3073	91 56 53	3078
9	SUN	W.	98 48 46	3459	100 9 56	3461	101 31 3	3463	102 52 8	3465
	MARS	W.	56 28 43	3333	57 52 16	3335	59 15 47	3336	60 39 17	3338
	VENUS	W.	54 6 0	3510	55 26 13	3511	56 46 25	3512	58 6 36	3513
	Aldebaran	W.	50 0 6	3074	51 28 47	3076	52 57 25	3078	54 26 1	3079
	Spica	E.	84 34 46	3098	83 6 34	3100	81 38 25	3102	80 10 18	3104
10	SUN	W.	109 37 16	3466	110 58 18	3465	112 19 21	3463	113 40 26	3461
	MARS	W.	67 36 38	3335	69 0 9	3334	70 23 41	3332	71 47 16	3329
	VENUS	W.	64 47 34	3507	66 7 50	3505	67 28 8	3502	68 48 30	3499
	Aldebaran	W.	61 48 54	3078	63 17 30	3076	64 46 9	3074	66 14 50	3072
	Pollux	W.	18 18 16	3267	19 43 6	3241	21 8 27	3218	22 34 16	3197
	Spica	E.	72 50 4	3106	71 22 2	3105	69 53 59	3104	68 25 54	3103
	Antares	E.	118 43 49	3114	117 15 56	3111	115 48 0	3108	114 20 0	3105

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVb	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
2	SUN	W.	23 52 26	2854	25 25 44	2859	26 58 55	2867	28 31 55	2878
	Pollux	E.	76 18 27	2453	74 36 8	2469	72 54 11	2485	71 12 37	2501
	JUPITER	E.	87 20 16	2436	85 37 32	2452	83 55 11	2467	82 13 12	2483
3	SUN	W.	36 13 19	2942	37 44 45	2957	39 15 52	2971	40 46 41	2986
	Pollux	E.	62 50 32	2586	61 11 18	2603	59 32 27	2621	57 54 0	2638
	JUPITER	E.	73 48 58	2566	72 9 16	2583	70 29 57	2599	68 51 1	2615
4	SUN	W.	48 15 53	3066	49 44 44	3082	51 13 15	3098	52 41 27	3114
	Pollux	E.	49 47 41	2726	48 11 36	2744	46 35 55	2762	45 0 38	2780
	JUPITER	E.	60 41 57	2698	59 5 15	2714	57 28 54	2731	55 52 55	2747
5	SUN	W.	59 57 40	3191	61 23 59	3206	62 50 1	3221	64 15 45	3236
	MARS	W.	16 45 6	3178	18 11 41	3174	19 38 21	3175	21 5 0	3178
	Pollux	E.	37 10 5	2872	35 37 10	2891	34 4 39	2910	32 32 32	2929
	JUPITER	E.	47 58 9	2823	46 24 11	2838	44 50 32	2852	43 17 11	2866
6	SUN	W.	71 20 20	3302	72 44 29	3314	74 8 24	3326	75 32 6	3337
	MARS	W.	28 16 51	3211	29 42 47	3219	31 8 34	3227	32 34 11	3236
	VENUS	W.	27 6 10	3421	28 28 3	3425	29 49 52	3430	31 11 35	3435
	Aldebaran	W.	20 5 46	2964	21 36 44	2969	23 7 35	2976	24 38 18	2983
	Pollux	E.	24 58 29	3041	23 29 7	3069	22 0 19	3100	20 32 9	3134
	JUPITER	E.	35 34 50	2931	34 3 10	2943	32 31 46	2954	31 0 36	2966
	Spica	E.	114 23 33	2957	112 52 27	2968	111 21 34	2978	109 50 54	2988
7	SUN	W.	82 27 25	3388	83 49 55	3396	85 12 16	3404	86 34 27	3412
	MARS	W.	39 39 53	3275	41 4 34	3282	42 29 7	3288	43 53 32	3294
	VENUS	W.	37 58 39	3463	39 19 44	3468	40 40 44	3474	42 1 37	3480
	Aldebaran	W.	32 9 38	3019	33 39 27	3025	35 9 9	3031	36 38 43	3037
	JUPITER	E.	23 28 11	3017	21 58 20	3026	20 28 40	3035	18 59 12	3044
	Spica	E.	102 20 33	3033	100 51 1	3041	99 21 39	3048	97 52 26	3055
8	SUN	W.	93 23 25	3443	94 44 53	3448	96 6 15	3452	97 27 32	3455
	MARS	W.	50 53 56	3320	52 17 44	3324	53 41 27	3327	55 5 7	3330
	VENUS	W.	48 44 42	3500	50 5 6	3503	51 25 27	3506	52 45 45	3508
	Aldebaran	W.	44 4 48	3062	45 33 44	3066	47 2 35	3069	48 31 22	3072
	Spica	E.	90 28 17	3083	88 59 47	3087	87 31 22	3091	86 3 2	3095
9	SUN	W.	104 13 11	3466	105 34 13	3467	106 55 14	3467	108 16 15	3467
	MARS	W.	62 2 45	3338	63 26 13	3338	64 49 40	3337	66 13 9	3336
	VENUS	W.	59 26 46	3512	60 46 57	3512	62 7 8	3511	63 27 20	3509
	Aldebaran	W.	55 54 36	3080	57 23 10	3080	58 51 44	3079	60 20 19	3079
	Spica	E.	78 42 13	3105	77 14 10	3106	75 46 8	3106	74 18 6	3106
10	SUN	W.	115 1 34	3458	116 22 45	3455	117 43 59	3452	119 5 17	3448
	MARS	W.	73 10 55	3325	74 34 37	3322	75 58 23	3318	77 22 13	3313
	VENUS	W.	70 8 55	3495	71 29 24	3491	72 49 58	3487	74 10 37	3482
	Aldebaran	W.	67 43 35	3069	69 12 23	3066	70 41 14	3062	72 10 10	3058
	Pollux	W.	24 0 29	3179	25 27 3	3164	26 53 55	3151	28 21 3	3138
	Spica	E.	66 57 48	3101	65 29 39	3099	64 1 28	3096	62 33 13	3093
	Antares	E.	112 51 56	3101	111 23 48	3097	109 55 35	3093	108 27 17	3088

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
11	SUN	W.	120 26 39	3443	121 48 6	3438	123 9 39	3434	124 31 17	3429
	MARS	W.	78 46 9	3308	80 10 10	3303	81 34 18	3297	82 58 33	3292
	VENUS	W.	75 31 21	3477	76 52 11	3471	78 13 8	3464	79 34 12	3458
	Aldebaran	W.	73 39 11	3053	75 8 17	3048	76 37 30	3043	78 6 49	3038
	Pollux	W.	29 48 26	3126	31 16 4	3115	32 43 55	3104	34 12 0	3093
	JUPITER	W.	18 5 25	3072	19 34 9	3066	21 3 0	3060	22 31 59	3054
	Spica	E.	61 4 55	3090	59 36 33	3086	58 8 7	3082	56 39 36	3078
	Antares	E.	106 58 54	3083	105 30 24	3078	104 1 48	3072	102 33 5	3066
12	MARS	W.	90 1 36	3257	91 26 38	3248	92 51 50	3240	94 17 12	3231
	VENUS	W.	86 21 30	3420	87 43 24	3411	89 5 28	3402	90 27 42	3393
	Aldebaran	W.	85 35 16	3005	87 5 23	2997	88 35 39	2989	90 6 5	2981
	Pollux	W.	41 35 32	3043	43 4 51	3033	44 34 22	3023	46 4 6	3013
	JUPITER	W.	29 58 55	3018	31 28 45	3011	32 58 44	3002	34 28 54	2994
	Spica	E.	49 15 44	3056	47 46 41	3052	46 17 32	3047	44 48 17	3042
	Antares	E.	95 7 32	3033	93 37 59	3026	92 8 18	3017	90 38 26	3009
13	MARS	W.	101 26 40	3184	102 53 8	3174	104 19 48	3164	105 46 40	3153
	Aldebaran	W.	97 40 54	2937	99 12 26	2928	100 44 9	2918	102 16 5	2908
	VENUS	W.	97 21 36	3344	98 44 57	3333	100 8 31	3322	101 32 17	3311
	Pollux	W.	53 35 55	2961	55 6 56	2950	56 38 11	2940	58 9 39	2929
	JUPITER	W.	42 2 24	2949	43 33 41	2940	45 5 9	2930	46 36 50	2920
	Spica	E.	37 20 39	3022	35 50 53	3020	34 21 4	3018	32 51 13	3017
	Antares	E.	83 6 29	2965	81 35 32	2956	80 4 24	2946	78 33 4	2936
14	Aldebaran	W.	109 58 57	2857	111 32 11	2846	113 5 38	2835	114 39 20	2825
	VENUS	W.	108 34 23	3254	109 59 28	3242	111 24 47	3231	112 50 19	3219
	Pollux	W.	65 50 28	2874	67 23 20	2863	68 56 27	2852	70 29 48	2840
	JUPITER	W.	54 18 26	2869	55 51 25	2859	57 24 37	2848	58 58 4	2837
	Antares	E.	70 53 18	2887	69 20 43	2877	67 47 56	2867	66 14 55	2858
	α Aquilæ	E.	114 59 9	3691	113 42 12	3662	112 24 44	3633	111 6 45	3605
15	Pollux	W.	78 20 15	2783	79 55 5	2772	81 30 9	2761	83 5 28	2750
	JUPITER	W.	66 48 52	2782	68 23 44	2771	69 58 51	2760	71 34 12	2748
	Antares	E.	58 26 42	2809	56 52 26	2800	55 17 57	2791	53 43 17	2782
	α Aquilæ	E.	104 29 47	3486	103 9 7	3466	101 48 5	3446	100 26 41	3428
16	Pollux	W.	91 5 44	2695	92 42 31	2684	94 19 32	2674	95 56 47	2664
	JUPITER	W.	79 34 35	2695	81 11 22	2684	82 48 24	2674	84 25 39	2663
	Antares	E.	45 47 5	2741	44 11 19	2735	42 35 25	2729	40 59 23	2723
	α Aquilæ	E.	93 34 54	3352	92 11 43	3341	90 48 19	3330	89 24 42	3320
17	Pollux	W.	104 6 27	2614	105 45 3	2604	107 23 52	2595	109 2 54	2586
	JUPITER	W.	92 35 26	2613	94 14 4	2604	95 52 54	2594	97 31 53	2584
	Spica	W.	15 33 13	3034	17 2 44	2991	18 33 58	2883	20 6 39	2827
	α Aquilæ	E.	82 24 8	3286	80 59 40	3283	79 35 9	3281	78 10 35	3281
	Fomalhaut	E.	115 39 13	2831	114 5 25	2815	112 31 16	2800	110 56 48	2786
18	JUPITER	W.	105 50 26	2540	107 30 44	2532	109 11 13	2524	110 51 53	2515
	Spica	W.	28 4 31	2659	29 42 6	2637	31 20 12	2618	32 58 43	2599
	α Aquilæ	E.	71 8 8	3300	69 43 55	3308	68 19 53	3319	66 56 4	3332
	Fomalhaut	E.	102 59 59	2722	101 23 48	2711	99 47 24	2701	98 10 46	2691

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
11	SUN W.	125 53 1	3423	127 14 52	3417	128 36 49	3411	129 58 53	3404
	MARS W.	84 22 54	3286	85 47 22	3279	87 11 58	3272	88 36 43	3265
	VENUS W.	80 55 23	3451	82 16 42	3444	83 38 9	3436	84 59 45	3428
	Aldebaran W.	79 36 15	3032	81 5 48	3026	82 35 29	3019	84 5 18	3012
	Pollux W.	35 40 18	3083	37 8 48	3073	38 37 30	3063	40 6 25	3053
	JUPITER W.	24 1 5	3047	25 30 19	3040	26 59 42	3033	28 29 14	3027
	Spica E.	55 11 0	3074	53 42 19	3070	52 13 33	3065	50 44 41	3061
	Antares E.	101 4 14	3060	99 35 16	3054	98 6 10	3047	96 36 55	3040
12	MARS W.	95 42 44	3223	97 8 26	3214	98 34 19	3204	100 0 23	3194
	VENUS W.	91 50 6	3383	93 12 42	3374	94 35 28	3364	95 58 26	3354
	Aldebaran W.	91 36 41	2973	93 7 28	2964	94 38 25	2955	96 9 34	2946
	Pollux W.	47 34 2	3003	49 4 11	2993	50 34 32	2982	52 5 7	2972
	JUPITER W.	35 59 14	2985	37 29 45	2977	39 0 26	2968	40 31 19	2958
	Spica E.	43 18 56	3037	41 49 29	3033	40 19 57	3029	38 50 20	3026
	Antares E.	89 8 24	3001	87 38 12	2992	86 7 49	2983	84 37 15	2974
13	MARS W.	107 13 45	3143	108 41 2	3132	110 8 32	3121	112 36 16	3110
	Aldebaran W.	103 48 14	2898	105 20 35	2888	106 53 9	2878	108 25 56	2867
	VENUS W.	102 56 16	3300	104 20 28	3288	105 44 53	3277	107 9 31	3265
	Pollux W.	59 41 21	2918	61 13 16	2907	62 45 26	2896	64 17 50	2885
	JUPITER W.	48 8 43	2910	49 40 49	2900	51 13 8	2890	52 45 40	2879
	Spica E.	31 21 21	3018	29 51 30	3020	28 21 42	3024	26 51 59	3028
	Antares E.	77 1 31	2927	75 29 47	2917	73 57 50	2907	72 25 40	2897
14	Aldebaran W.	116 13 15	2815	117 47 24	2804	119 21 47	2793	120 56 24	2782
	VENUS W.	114 16 6	3207	115 42 7	3195	117 8 22	3184	118 34 51	3173
	Pollux W.	72 3 24	2829	73 37 15	2818	75 11 20	2806	76 45 40	2795
	JUPITER W.	60 31 47	2826	62 5 42	2815	63 39 51	2804	65 14 14	2793
	Antares E.	64 41 42	2848	63 8 16	2838	61 34 37	2828	60 0 46	2818
	α Aquilæ E.	109 48 16	3579	108 29 19	3554	107 9 54	3530	105 50 3	3507
15	Pollux W.	84 41 2	2739	86 16 51	2728	87 52 54	2717	89 29 12	2706
	JUPITER W.	73 9 48	2737	74 45 38	2726	76 21 43	2716	77 58 2	2705
	Antares E.	52 8 25	2773	50 33 21	2764	48 58 6	2756	47 22 41	2748
	α Aquilæ E.	99 4 56	3411	97 42 52	3395	96 20 30	3379	94 57 50	3365
16	Pollux W.	97 34 16	2654	99 11 58	2643	100 49 54	2633	102 28 4	2624
	JUPITER W.	86 3 9	2653	87 40 53	2643	89 18 50	2632	90 57 1	2622
	Antares E.	39 23 13	2718	37 46 57	2714	36 10 36	2712	34 34 12	2710
	α Aquilæ E.	88 0 54	3311	86 36 55	3303	85 12 47	3296	83 48 31	3290
17	Pollux W.	110 42 8	2577	112 21 34	2569	114 1 12	2561	115 41 1	2553
	JUPITER W.	99 11 15	2575	100 50 44	2566	102 30 26	2557	104 10 20	2548
	Spica W.	21 40 33	2782	23 15 25	2745	24 51 5	2713	26 27 28	2683
	α Aquilæ E.	76 46 1	3281	75 21 27	3283	73 56 55	3287	72 32 28	3293
	Fomalhaut E.	109 22 1	2772	107 46 56	2759	106 11 34	2746	104 35 55	2733
18	JUPITER W.	112 32 45	2507	114 13 48	2499	115 55 2	2492	117 36 26	2485
	Spica W.	34 37 39	2583	36 16 58	2567	37 56 38	2553	39 36 37	2540
	α Aquilæ E.	65 32 29	3347	64 9 11	3364	62 46 13	3384	61 23 38	3407
	Fomalhaut E.	96 33 54	2682	94 56 50	2673	93 19 34	2665	91 42 6	2657

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
18	α Pegasi E.	118 38 3	3048	117 8 50	3025	115 39 8	3002	114 8 58	2981
19	Spica W.	41 16 55	2528	42 57 29	2517	44 38 19	2506	46 19 25	2495
	α Aquilæ E.	60 1 30	3433	58 39 51	3463	57 18 45	3496	55 58 16	3533
	Fomalhaut E.	90 4 28	2650	88 26 40	2643	86 48 43	2637	85 10 37	2631
	α Pegasi E.	106 32 1	2894	104 59 35	2880	103 26 51	2867	101 53 50	2855
	SATURN E.	120 15 29	2502	118 34 18	2494	116 52 57	2487	115 11 25	2480
20	Spica W.	54 48 14	2451	56 30 36	2444	58 13 8	2436	59 55 51	2429
	α Aquilæ E.	49 27 42	3796	48 12 35	3869	46 58 44	3950	45 46 16	4041
	Fomalhaut E.	76 58 25	2610	75 19 43	2607	73 40 57	2604	72 2 8	2602
	α Pegasi E.	94 5 16	2808	92 30 59	2801	90 56 33	2795	89 21 59	2790
	SATURN E.	106 41 22	2447	104 58 54	2441	103 16 18	2435	101 33 34	2429
	SUN E.	132 43 21	2750	131 7 48	2743	129 32 5	2735	127 56 12	2729
21	Spica W.	68 31 51	2398	70 15 29	2393	71 59 14	2387	73 43 7	2382
	Antares W.	23 7 31	2566	24 47 13	2556	26 27 36	2541	28 8 34	2489
	Fomalhaut E.	63 47 52	2607	62 9 6	2610	60 30 25	2614	58 51 50	2619
	α Pegasi E.	81 27 48	2776	79 52 49	2776	78 17 50	2777	76 42 52	2779
	SATURN E.	92 57 54	2403	91 14 25	2398	89 30 48	2394	87 47 4	2389
	SUN E.	119 54 34	2696	118 17 49	2691	116 40 57	2685	115 3 57	2680
22	Spica W.	82 24 19	2359	84 8 52	2355	85 53 31	2351	87 38 16	2348
	Antares W.	36 39 51	2415	38 23 4	2405	40 6 32	2396	41 50 13	2387
	Fomalhaut E.	50 41 14	2667	49 3 49	2682	47 26 45	2699	45 50 4	2718
	α Pegasi E.	68 49 2	2803	67 14 38	2812	65 40 25	2822	64 6 26	2834
	SATURN E.	79 6 52	2368	77 22 32	2364	75 38 6	2361	73 53 35	2357
	SUN E.	106 57 15	2655	105 19 35	2651	103 41 49	2647	102 3 57	2643
23	Spica W.	96 23 14	2332	98 8 27	2329	99 53 45	2326	101 39 6	2324
	Antares W.	50 31 28	2353	52 16 11	2347	54 1 2	2342	55 46 0	2337
	α Pegasi E.	56 21 3	2921	54 49 11	2945	53 17 50	2973	51 47 4	3005
	SATURN E.	65 9 48	2342	63 24 49	2339	61 39 46	2336	59 54 39	2334
	SUN E.	93 53 19	2624	92 14 57	2611	90 36 30	2618	88 57 59	2615
24	Spica W.	110 26 33	2316	112 12 9	2315	113 57 46	2315	115 43 24	2314
	Antares W.	64 32 24	2319	66 17 56	2316	68 3 33	2313	69 49 14	2311
	SATURN E.	51 8 17	2324	49 22 53	2323	47 37 26	2322	45 51 58	2321
	SUN E.	80 44 27	2602	79 5 35	2601	77 26 41	2599	75 47 44	2597
25	Antares W.	78 38 23	2302	80 24 19	2302	82 10 16	2301	83 56 14	2300
	α Aquilæ W.	42 2 52	4180	43 11 37	4053	44 22 24	3940	45 35 3	3840
	SATURN E.	37 4 23	2320	35 18 53	2321	33 33 24	2322	31 47 57	2324
	SUN E.	67 32 33	2593	65 53 28	2592	64 14 22	2592	62 35 16	2593
26	Antares W.	92 46 4	2303	94 31 59	2305	96 17 51	2307	98 3 41	2309
	α Aquilæ W.	52 1 14	3470	53 22 12	3416	54 44 11	3368	56 7 4	3326
	SUN E.	54 20 3	2599	52 41 6	2601	51 2 12	2604	49 23 22	2607
27	Antares W.	106 51 51	2325	108 37 14	2330	110 22 30	2335	112 7 39	2340
	α Aquilæ W.	63 12 22	3169	64 39 8	3147	66 6 21	3127	67 33 58	3110
	SUN E.	41 10 25	2629	39 32 8	2635	37 54 0	2641	36 16 1	2648

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
18	<i>a</i> Pegasi E.	112 38 21	2961	111 7 20	2942	109 35 55	2925	108 4 8	2909
19	Spica W.	48 0 45	2485	49 42 19	2476	51 24 5	2467	53 6 4	2459
	<i>a</i> Aquilæ E.	54 38 27	3574	53 19 24	3520	52 1 12	3573	50 43 56	3731
	Fomalhaut E.	83 32 24	2626	81 54 3	2621	80 15 36	2617	78 37 3	2613
	<i>a</i> Pegasi E.	100 20 34	2844	98 47 3	2834	97 13 19	2825	95 39 23	2816
	SATURN E.	113 29 43	2473	111 47 52	2466	110 5 51	2460	108 23 41	2453
20	Spica W.	61 38 45	2422	63 21 48	2416	65 5 0	2410	66 48 21	2404
	<i>a</i> Aquilæ E.	44 35 16	4143	43 25 55	4258	42 18 24	4388	41 12 52	4532
	Fomalhaut E.	70 23 16	2602	68 44 24	2602	67 5 32	2603	65 26 41	2604
	<i>a</i> Pegasi E.	87 47 19	2786	86 12 33	2782	84 37 41	2779	83 2 46	2777
	SATURN E.	99 50 41	2424	98 7 41	2419	96 24 33	2413	94 41 17	2408
	SUN E.	126 20 10	2722	124 43 59	2715	123 7 39	2709	121 31 11	2702
21	Spica W.	75 27 8	2377	77 11 16	2373	78 55 30	2368	80 39 51	2363
	Antares W.	29 50 3	2470	31 31 59	2454	33 14 17	2440	34 56 55	2427
	Fomalhaut E.	57 13 21	2626	55 35 1	2634	53 56 52	2643	52 18 56	2654
	<i>a</i> Pegasi E.	75 7 56	2781	73 33 3	2785	71 58 16	2790	70 23 35	2796
	SATURN E.	86 3 13	2385	84 19 17	2381	82 35 15	2377	80 51 7	2372
	SUN E.	113 26 50	2675	111 49 36	2670	110 12 16	2665	108 34 49	2660
22	Spica W.	89 23 6	2344	91 8 1	2341	92 53 1	2338	94 38 5	2335
	Antares W.	43 34 7	2379	45 18 12	2372	47 2 28	2365	48 46 53	2359
	Fomalhaut E.	44 13 48	2741	42 38 2	2768	41 2 52	2798	39 28 22	2831
	<i>a</i> Pegasi E.	62 32 42	2847	60 59 15	2862	59 26 8	2880	57 53 23	2899
	SATURN E.	72 8 59	2354	70 24 18	2351	68 39 33	2348	66 54 43	2345
	SUN E.	100 26 0	2639	98 47 57	2635	97 9 50	2631	95 31 37	2627
23	Spica W.	103 24 30	2322	105 9 57	2320	106 55 27	2319	108 40 59	2317
	Antares W.	57 31 5	2333	59 16 16	2329	61 1 33	2325	62 46 56	2322
	<i>a</i> Pegasi E.	50 16 58	3041	48 47 36	3080	47 19 2	3124	45 51 22	3176
	SATURN E.	58 9 29	2332	56 24 15	2330	54 38 59	2328	52 53 39	2326
	SUN E.	87 19 24	2612	85 40 45	2609	84 2 2	2607	82 23 16	2604
24	Spica W.	117 29 3	2314	119 14 42	2315	121 0 20	2315	122 45 58	2315
	Antares W.	71 34 58	2309	73 20 45	2306	75 6 36	2304	76 52 29	2303
	SATURN E.	44 6 28	2320	42 20 57	2320	40 35 26	2319	38 49 54	2320
	SUN E.	74 8 45	2596	72 29 44	2595	70 50 42	2594	69 11 38	2593
25	Antares W.	85 42 13	2300	87 28 12	2301	89 14 10	2301	91 0 8	2302
	<i>a</i> Aquilæ W.	46 49 24	3749	48 5 19	3667	49 22 41	3594	50 41 22	3529
	SATURN E.	30 2 33	2327	28 17 13	2331	26 31 58	2335	24 46 49	2339
	SUN E.	60 56 11	2594	59 17 7	2595	57 38 4	2596	55 59 3	2597
26	Antares W.	99 49 27	2312	101 35 9	2314	103 20 48	2317	105 6 22	2321
	<i>a</i> Aquilæ W.	57 30 45	3287	58 55 12	3252	60 20 20	3220	61 46 5	3193
	SUN E.	47 44 36	2610	46 5 55	2614	44 27 19	2618	42 48 49	2623
27	Antares W.	113 52 41	2346	115 37 34	2352	117 22 19	2358	119 6 54	2364
	<i>a</i> Aquilæ W.	69 1 55	3096	70 30 10	3084	71 58 39	3074	73 27 20	3067
	SUN E.	34 38 11	2657	33 0 32	2666	31 23 7	2675	29 45 54	2684

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ' "	"	' "	s	m s	s
Frid.	1	2 33 4.42	9.543	N.15 2 18.4	+ 45.48	15 53.84	66.01	2 57.77	0.312
Sat.	2	2 36 53.73	9.566	15 20 22.3	44.85	15 53.61	66.10	3 5.00	0.290
SUN.	3	2 40 43.57	9.588	15 38 11.0	44.20	15 53.38	66.18	3 11.70	0.268
Mon.	4	2 44 33.95	9.611	15 55 44.1	+ 43.54	15 53.15	66.26	3 17.86	0.245
Tues.	5	2 48 24.89	9.634	16 13 1.5	42.87	15 52.93	66.34	3 23.46	0.222
Wed.	6	2 52 16.36	9.657	16 30 2.5	42.19	15 52.71	66.42	3 28.53	0.200
Thur.	7	2 56 8.39	9.680	16 46 47.1	+ 41.50	15 52.49	66.50	3 33.04	0.177
Frid.	8	3 0 0.98	9.703	17 3 14.9	40.80	15 52.28	66.58	3 37.00	0.154
Sat.	9	3 3 54.11	9.726	17 19 25.5	40.08	15 52.07	66.66	3 40.41	0.131
SUN.	10	3 7 47.81	9.749	17 35 18.8	+ 39.35	15 51.86	66.74	3 43.26	0.108
Mon.	11	3 11 42.06	9.772	17 50 54.3	38.60	15 51.65	66.82	3 45.55	0.084
Tues.	12	3 15 36.86	9.795	18 6 11.8	37.84	15 51.44	66.91	3 47.31	0.061
Wed.	13	3 19 32.25	9.818	18 21 11.0	+ 37.08	15 51.23	67.00	3 48.48	0.038
Thur.	14	3 23 28.18	9.842	18 35 51.8	36.30	15 51.03	67.08	3 49.09	0.014
Frid.	15	3 27 24.69	9.865	18 50 13.6	35.51	15 50.83	67.16	3 49.14	0.009
Sat.	16	3 31 21.76	9.890	19 4 16.5	+ 34.71	15 50.63	67.24	3 48.62	0.033
SUN.	17	3 35 19.40	9.914	19 18 0.0	33.90	15 50.44	67.33	3 47.54	0.057
Mon.	18	3 39 17.62	9.937	19 31 23.8	33.08	15 50.25	67.41	3 45.90	0.080
Tues.	19	3 43 16.39	9.961	19 44 27.9	+ 32.24	15 50.06	67.49	3 43.68	0.104
Wed.	20	3 47 15.75	9.984	19 57 12.0	31.40	15 49.87	67.56	3 40.89	0.128
Thur.	21	3 51 15.66	10.008	20 9 35.7	30.56	15 49.68	67.64	3 37.55	0.151
Frid.	22	3 55 16.13	10.031	20 21 38.8	+ 29.71	15 49.50	67.71	3 33.64	0.174
Sat.	23	3 59 17.15	10.054	20 33 21.2	28.84	15 49.32	67.78	3 29.19	0.197
SUN.	24	4 3 18.71	10.077	20 44 42.5	27.95	15 49.14	67.85	3 24.19	0.219
Mon.	25	4 7 20.81	10.098	20 55 42.5	+ 27.05	15 48.97	67.92	3 18.66	0.241
Tues.	26	4 11 23.42	10.119	21 6 21.1	26.15	15 48.80	67.99	3 12.63	0.262
Wed.	27	4 15 26.53	10.140	21 16 37.9	25.24	15 48.64	68.06	3 6.09	0.283
Thur.	28	4 19 30.13	10.160	21 26 32.7	+ 24.32	15 48.48	68.12	2 59.07	0.303
Frid.	29	4 23 34.21	10.179	21 36 5.3	23.39	15 48.33	68.19	2 51.57	0.322
Sat.	30	4 27 38.74	10.197	21 45 15.4	22.45	15 48.18	68.25	2 43.61	0.340
SUN.	31	4 31 43.70	10.215	21 54 2.9	21.50	15 48.04	68.31	2 35.23	0.358
Mon.	32	4 35 49.08	10.232	N.22 2 27.5	+ 20.54	15 47.90	68.37	2 26.44	0.375

NOTE. The mean time of semidiameter passing the meridian may be found by subtracting 0^s.19 from the sidereal time.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ' "	"	m s	s	h m s
Frid.	1	2 33 4.89	9.544	N.15 2 20.6	+45.48	2 57.79	0.312	2 36 2.68
Sat.	2	2 36 54.22	9.566	15 20 24.6	44.85	3 5.02	0.290	2 39 59.24
SUN.	3	2 40 44.08	9.588	15 38 13.4	44.20	3 11.71	0.268	2 43 55.79
Mon.	4	2 44 34.48	9.611	15 55 46.5	+43.54	3 17.87	0.245	2 47 52.35
Tues.	5	2 48 25.43	9.634	16 13 3.9	42.87	3 23.47	0.222	2 51 48.90
Wed.	6	2 52 16.92	9.657	16 30 5.0	42.19	3 28.54	0.200	2 55 45.46
Thur.	7	2 56 8.96	9.680	16 46 49.6	+41.50	3 33.05	0.177	2 59 42.01
Frid.	8	3 0 1.56	9.703	17 3 17.4	40.80	3 37.01	0.154	3 3 38.57
Sat.	9	3 3 54.70	9.726	17 19 28.0	40.08	3 40.42	0.131	3 7 35.12
SUN.	10	3 7 48.41	9.749	17 35 21.2	+39.35	3 43.27	0.108	3 11 31.68
Mon.	11	3 11 42.67	9.772	17 50 56.7	38.60	3 45.56	0.084	3 15 28.23
Tues.	12	3 15 37.48	9.795	18 6 14.2	37.84	3 47.31	0.061	3 19 24.79
Wed.	13	3 19 32.87	9.818	18 21 13.4	+37.08	3 48.48	0.038	3 23 21.35
Thur.	14	3 23 28.81	9.842	18 35 54.1	36.30	3 49.09	0.014	3 27 17.90
Frid.	15	3 27 25.32	9.866	18 50 15.9	35.51	3 49.14	0.009	3 31 14.46
Sat.	16	3 31 22.39	9.891	19 4 18.7	+34.71	3 48.62	0.033	3 35 11.01
SUN.	17	3 35 20.03	9.915	19 18 2.1	33.90	3 47.54	0.057	3 39 7.57
Mon.	18	3 39 18.24	9.939	19 31 25.9	33.08	3 45.89	0.080	3 43 4.13
Tues.	19	3 43 17.01	9.962	19 44 29.9	+32.24	3 43.67	0.104	3 47 0.68
Wed.	20	3 47 16.36	9.985	19 57 13.9	31.40	3 40.88	0.128	3 50 57.24
Thur.	21	3 51 16.26	10.008	20 9 37.6	30.55	3 37.54	0.151	3 54 53.80
Frid.	22	3 55 16.72	10.031	20 21 40.6	+29.69	3 33.63	0.174	3 58 50.35
Sat.	23	3 59 17.73	10.054	20 33 22.9	28.82	3 29.18	0.197	4 2 46.91
SUN.	24	4 3 19.28	10.076	20 44 44.1	27.94	3 24.18	0.219	4 6 43.46
Mon.	25	4 7 21.36	10.097	20 55 44.0	+27.05	3 18.65	0.241	4 10 40.02
Tues.	26	4 11 23.96	10.118	21 6 22.5	26.15	3 12.62	0.262	4 14 36.58
Wed.	27	4 15 27.06	10.139	21 16 39.2	25.24	3 6.08	0.283	4 18 33.14
Thur.	28	4 19 30.64	10.159	21 26 33.9	+24.32	2 59.05	0.303	4 22 29.69
Frid.	29	4 23 34.70	10.178	21 36 6.4	23.39	2 51.55	0.322	4 26 26.25
Sat.	30	4 27 39.21	10.196	21 45 16.4	22.45	2 43.59	0.340	4 30 22.81
SUN.	31	4 31 44.15	10.214	21 54 3.8	21.50	2 35.21	0.358	4 34 19.36
Mon.	32	4 35 49.50	10.231	N.22 2 28.4	+20.54	2 26.42	0.375	4 38 15.92

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

Diff. for 1 Hour,
+9°.8565.
(Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.	
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.				
		λ	λ'						
		° ' "	' "	"	"			h m s	
1	122	40 41 57.4	41 59.1	145.55	— 0.03	0.003 4710	+ 45.0	21 20 26.97	
2	123	41 40 9.7	40 11.2	145.47	+ 0.07	0.003 5782	44.3	21 16 31.06	
3	124	42 38 20.1	38 21.5	145.39	0.18	0.003 6837	43.6	21 12 35.15	
4	125	43 36 28.6	36 29.8	145.32	+ 0.31	0.003 7877	+ 43.0	21 8 39.24	
5	126	44 34 35.2	34 36.3	145.24	0.43	0.003 8901	42.4	21 4 43.34	
6	127	45 32 40.0	32 40.9	145.16	0.56	0.003 9910	41.8	21 0 47.43	
7	128	46 30 42.8	30 43.7	145.08	+ 0.67	0.004 0906	+ 41.2	20 56 51.52	
8	129	47 28 43.8	28 44.5	145.00	0.78	0.004 1888	40.7	20 52 55.61	
9	130	48 26 42.9	26 43.5	144.93	0.87	0.004 2858	40.2	20 48 59.70	
10	131	49 24 40.2	24 40.6	144.85	+ 0.92	0.004 3816	+ 39.7	20 45 3.79	
11	132	50 22 35.7	22 35.9	144.77	0.96	0.004 4763	39.2	20 41 7.88	
12	133	51 20 29.4	20 29.5	144.70	0.96	0.004 5699	38.8	20 37 11.97	
13	134	52 18 21.3	18 21.3	144.63	+ 0.94	0.004 6625	+ 38.4	20 33 16.06	
14	135	53 16 11.6	16 11.5	144.56	0.90	0.004 7543	38.0	20 29 20.15	
15	136	54 14 0.4	14 0.1	144.50	0.82	0.004 8452	37.7	20 25 24.24	
16	137	55 11 47.6	11 47.1	144.44	+ 0.73	0.004 9353	+ 37.3	20 21 28.33	
17	138	56 9 33.4	9 32.8	144.38	0.61	0.005 0246	37.0	20 17 32.42	
18	139	57 7 18.0	7 17.2	144.33	0.47	0.005 1129	36.6	20 13 36.51	
19	140	58 5 1.3	5 0.4	144.28	+ 0.33	0.005 2004	+ 36.2	20 9 40.60	
20	141	59 2 43.5	2 42.4	144.23	0.20	0.005 2868	35.7	20 5 44.69	
21	142	60 0 24.6	0 23.4	144.19	+ 0.08	0.005 3719	35.2	20 1 48.78	
22	143	60 58 4.7	58 3.3	144.15	— 0.03	0.005 4558	+ 34.6	19 57 52.87	
23	144	61 55 43.8	55 42.3	144.11	0.12	0.005 5381	33.9	19 53 56.96	
24	145	62 53 22.0	53 20.4	144.07	0.17	0.005 6187	33.2	19 50 1.05	
25	146	63 50 59.3	50 57.4	144.03	— 0.19	0.005 6974	+ 32.4	19 46 5.14	
26	147	64 48 35.6	48 33.6	143.99	0.17	0.005 7742	31.5	19 42 9.22	
27	148	65 46 11.0	46 8.8	143.95	0.14	0.005 8488	30.6	19 38 13.31	
28	149	66 43 45.4	43 43.0	143.91	— 0.07	0.005 9213	+ 29.7	19 34 17.40	
29	150	67 41 18.7	41 16.2	143.87	+ 0.02	0.005 9914	28.8	19 30 21.49	
30	151	68 38 51.0	38 48.4	143.83	0.14	0.006 0593	27.8	19 26 25.58	
31	152	69 36 22.3	36 19.4	143.78	0.28	0.006 1248	26.8	19 22 29.67	
32	153	70 33 52.4	33 49.4	143.73	+ 0.41	0.006 1880	+ 25.9	19 18 33.76	

NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.

Diff. for 1 Hour,
— 9^h 8296.
(Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S									
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.	
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.	
	' "	' "	' "	"	' "	"	h m	m	d	
1	15 37.9	15 32.6	57 16.3	- 1.61	56 56.7	- 1.64	0 45.0	2.09	0.8	
2	15 27.1	15 21.8	56 36.8	1.65	56 17.1	1.63	1 35.4	2.12	1.8	
3	15 16.5	15 11.5	55 57.8	1.57	55 39.4	1.48	2 26.6	2.14	2.8	
4	15 6.8	15 2.5	55 22.2	- 1.37	55 6.4	- 1.24	3 18.1	2.14	3.8	
5	14 58.7	14 55.4	54 52.4	1.09	54 40.3	0.92	4 9.1	2.11	4.8	
6	14 52.7	14 50.6	54 30.4	0.73	54 22.8	0.53	4 59.0	2.04	5.8	
7	14 49.2	14 48.6	54 17.7	- 0.32	54 15.2	- 0.11	5 47.3	1.98	6.8	
8	14 48.6	14 49.3	54 15.2	+ 0.11	54 17.8	+ 0.33	6 33.7	1.89	7.8	
9	14 50.7	14 52.8	54 23.1	0.54	54 30.8	0.75	7 18.4	1.84	8.8	
10	14 55.6	14 59.0	54 40.9	+ 0.94	54 53.3	+ 1.12	8 2.0	1.80	9.8	
11	15 2.9	15 7.3	55 7.8	1.28	55 24.1	1.42	8 45.0	1.80	10.8	
12	15 12.2	15 17.4	55 42.0	1.55	56 1.2	1.64	9 28.4	1.83	11.8	
13	15 22.9	15 28.6	56 21.4	+ 1.70	56 42.1	+ 1.74	10 13.0	1.89	12.8	
14	15 34.3	15 40.0	57 3.1	1.74	57 23.8	1.71	10 59.9	2.01	13.8	
15	15 45.5	15 50.7	57 44.0	1.64	58 3.2	1.55	11 49.7	2.15	14.8	
16	15 55.6	16 0.0	58 21.1	+ 1.42	58 37.4	+ 1.28	12 43.2	2.30	15.8	
17	16 3.9	16 7.3	58 51.8	1.11	59 4.0	0.93	13 40.3	2.44	16.8	
18	16 10.0	16 12.1	59 14.1	0.75	59 21.9	0.55	14 40.2	2.53	17.8	
19	16 13.6	16 14.6	59 27.5	+ 0.37	59 30.8	+ 0.19	15 41.0	2.53	18.8	
20	16 14.9	16 14.7	59 32.0	+ 0.02	59 31.4	- 0.13	16 41.0	2.45	19.8	
21	16 14.0	16 13.0	59 28.9	- 0.27	59 24.9	0.40	17 38.4	2.33	20.8	
22	16 11.5	16 9.6	59 19.4	- 0.50	59 12.7	- 0.60	18 32.8	2.20	21.8	
23	16 7.5	16 5.1	59 4.9	0.69	58 56.2	0.77	19 24.2	2.10	22.8	
24	16 2.5	15 59.6	58 46.5	0.84	58 36.0	0.90	20 13.4	2.02	23.8	
25	15 56.6	15 53.3	58 24.8	- 0.97	58 12.8	- 1.03	21 1.5	1.99	24.8	
26	15 49.9	15 46.2	58 0.1	1.09	57 46.8	1.14	21 49.2	1.99	25.8	
27	15 42.4	15 38.4	57 32.8	1.19	57 18.3	1.23	22 37.5	2.03	26.8	
28	15 34.3	15 30.1	57 3.2	- 1.27	56 47.8	- 1.30	23 26.8	2.08	27.8	
29	15 25.8	15 21.5	56 32.1	1.32	56 16.2	1.32	0	.	28.8	
30	15 17.2	15 13.0	56 0.4	1.31	55 44.9	1.28	0 17.3	2.13	0.4	
31	15 8.9	15 5.0	55 29.8	1.23	55 15.3	1.16	1 8.7	2.15	1.4	
32	15 1.3	14 57.9	55 1.8	- 1.08	54 49.4	- 0.98	2 0.3	2.14	2.4	

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 1.					SUNDAY 3.				
0	h m s	s	N. 14 36 48.7	10.556	0	h m s	s	N. 21 10 55.3	5.626
1	3 19 32.47	2.1767	14 47 19.5	10.470	1	5 7 44.72	2.2322	21 16 29.4	5.511
2	3 21 43.11	2.1781	14 57 45.1	10.382	2	5 9 58.70	2.2332	21 21 56.6	5.395
3	3 23 53.84	2.1795	15 8 5.4	10.295	3	5 12 12.71	2.2337	21 27 16.8	5.278
4	3 26 4.65	2.1808	15 18 20.5	10.207	4	5 14 26.75	2.2342	21 32 30.0	5.162
5	3 28 15.54	2.1822	15 28 30.2	10.117	5	5 16 40.82	2.2346	21 37 36.3	5.047
6	3 30 26.51	2.1836	15 38 34.6	10.027	6	5 18 54.90	2.2348	21 42 35.6	4.929
7	3 32 37.57	2.1851	15 48 33.5	9.936	7	5 21 9.00	2.2352	21 47 27.8	4.812
8	3 34 48.72	2.1865	15 58 26.9	9.843	8	5 23 23.12	2.2354	21 52 13.0	4.695
9	3 36 59.95	2.1878	16 8 14.7	9.751	9	5 25 37.25	2.2357	21 56 51.2	4.577
10	3 39 11.26	2.1892	16 17 57.0	9.658	10	5 27 51.40	2.2359	22 1 22.3	4.459
11	3 41 22.66	2.1907	16 27 33.7	9.563	11	5 30 5.56	2.2360	22 5 46.3	4.342
12	3 43 34.14	2.1920	16 37 4.6	9.467	12	5 32 19.72	2.2360	22 10 3.3	4.224
13	3 45 45.70	2.1934	16 46 29.8	9.372	13	5 34 33.88	2.2361	22 14 13.2	4.105
14	3 47 57.35	2.1948	16 55 49.3	9.276	14	5 36 48.05	2.2362	22 18 15.9	3.987
15	3 50 9.08	2.1962	17 5 2.9	9.178	15	5 39 2.22	2.2361	22 22 11.6	3.869
16	3 52 20.89	2.1975	17 14 10.7	9.081	16	5 41 16.38	2.2359	22 26 0.2	3.750
17	3 54 32.78	2.1989	17 23 12.6	8.982	17	5 43 30.53	2.2357	22 29 41.6	3.631
18	3 56 44.76	2.2003	17 32 8.5	8.882	18	5 45 44.67	2.2356	22 33 15.9	3.512
19	3 58 56.82	2.2016	17 40 58.4	8.782	19	5 47 58.80	2.2353	22 36 43.0	3.392
20	4 1 8.95	2.2029	17 49 42.3	8.681	20	5 50 12.91	2.2350	22 40 3.0	3.274
21	4 3 21.17	2.2042	17 58 20.1	8.579	21	5 52 27.00	2.2347	22 43 15.9	3.155
22	4 5 33.46	2.2056	18 6 51.8	8.477	22	5 54 41.07	2.2343	22 46 21.6	3.036
23	4 7 45.84	2.2069	N. 18 15 17.4	8.374	23	5 56 55.12	2.2339	N. 22 49 20.2	2.917
24	4 9 58.29	2.2081							
SATURDAY 2.					MONDAY 4.				
0	4 12 10.81	2.2093	N. 18 23 36.7	8.270	0	5 59 9.14	2.2334	N. 22 52 11.6	2.797
1	4 14 23.41	2.2106	18 31 49.8	8.167	1	6 1 23.13	2.2329	22 54 55.9	2.678
2	4 16 36.08	2.2118	18 39 56.7	8.062	2	6 3 37.09	2.2323	22 57 33.0	2.559
3	4 18 48.83	2.2131	18 47 57.2	7.956	3	6 5 51.01	2.2317	23 0 3.0	2.440
4	4 21 1.65	2.2142	18 55 51.4	7.851	4	6 8 4.89	2.2310	23 2 25.8	2.321
5	4 23 14.54	2.2154	19 3 39.3	7.744	5	6 10 18.73	2.2302	23 4 41.5	2.202
6	4 25 27.50	2.2166	19 11 20.7	7.636	6	6 12 32.52	2.2295	23 6 50.0	2.082
7	4 27 40.53	2.2177	19 18 55.6	7.528	7	6 14 46.27	2.2287	23 8 51.4	1.963
8	4 29 53.62	2.2187	19 26 24.1	7.421	8	6 16 59.96	2.2277	23 10 45.6	1.844
9	4 32 6.78	2.2198	19 33 46.1	7.312	9	6 19 13.60	2.2269	23 12 32.7	1.726
10	4 34 20.00	2.2209	19 41 1.6	7.202	10	6 21 27.19	2.2259	23 14 12.7	1.607
11	4 36 33.29	2.2219	19 48 10.4	7.092	11	6 23 40.71	2.2248	23 15 45.6	1.488
12	4 38 46.63	2.2228	19 55 12.7	6.982	12	6 25 54.17	2.2238	23 17 11.3	1.369
13	4 41 0.03	2.2238	20 2 8.3	6.872	13	6 28 7.57	2.2227	23 18 29.9	1.252
14	4 43 13.49	2.2247	20 8 57.3	6.761	14	6 30 20.89	2.2215	23 19 41.5	1.133
15	4 45 27.00	2.2257	20 15 39.6	6.649	15	6 32 34.15	2.2203	23 20 45.9	1.014
16	4 47 40.57	2.2266	20 22 15.2	6.537	16	6 34 47.33	2.2190	23 21 43.2	0.897
17	4 49 54.19	2.2274	20 28 44.0	6.424	17	6 37 0.43	2.2177	23 22 33.5	0.780
18	4 52 7.86	2.2282	20 35 6.1	6.312	18	6 39 13.45	2.2163	23 23 16.8	0.662
19	4 54 21.57	2.2289	20 41 21.4	6.198	19	6 41 26.39	2.2149	23 23 53.0	0.544
20	4 56 35.33	2.2297	20 47 29.9	6.084	20	6 43 39.24	2.2135	23 24 22.1	0.427
21	4 58 49.13	2.2303	20 53 31.5	5.970	21	6 45 52.01	2.2120	23 24 44.2	0.310
22	5 1 2.97	2.2310	20 59 26.3	5.857	22	6 48 4.68	2.2104	23 24 59.3	0.194
23	5 3 16.85	2.2317	21 5 14.3	5.742	23	6 50 17.26	2.2088	23 25 7.5	+0.077
24	5 5 30.77	2.2322	N. 21 10 55.3	5.626	24	6 52 29.74	2.2072	N. 23 25 8.6	-0.039

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 5.					THURSDAY 7.				
0	h m s				0	h m s			
0	6 52 29.74	2.2072	N.23 25 8.6	-0.039	0	8 35 52.14	2.0897	N.21 16 9.1	5.167
1	6 54 42.12	2.2055	23 25 2.8	0.155	1	8 37 57.43	2.0867	21 10 56.2	5.262
2	6 56 54.40	2.2038	23 24 50.0	0.271	2	8 40 2.55	2.0838	21 5 37.6	5.357
3	6 59 6.58	2.2021	23 24 30.3	0.386	3	8 42 7.49	2.0809	21 0 13.3	5.452
4	7 1 18.65	2.2002	23 24 3.7	0.501	4	8 44 12.26	2.0780	20 54 43.4	5.545
5	7 3 30.61	2.1984	23 23 30.2	0.616	5	8 46 16.85	2.0750	20 49 7.9	5.637
6	7 5 42.46	2.1966	23 22 49.8	0.730	6	8 48 21.26	2.0721	20 43 26.9	5.730
7	7 7 54.20	2.1947	23 22 2.6	0.844	7	8 50 25.50	2.0692	20 37 40.3	5.822
8	7 10 5.82	2.1927	23 21 8.5	0.958	8	8 52 29.57	2.0663	20 31 48.2	5.913
9	7 12 17.32	2.1906	23 20 7.6	1.072	9	8 54 33.46	2.0633	20 25 50.7	6.004
10	7 14 28.69	2.1885	23 18 59.9	1.186	10	8 56 37.17	2.0604	20 19 47.7	6.094
11	7 16 39.94	2.1865	23 17 45.3	1.298	11	8 58 40.71	2.0576	20 13 39.4	6.183
12	7 18 51.07	2.1844	23 16 24.1	1.410	12	9 0 44.08	2.0547	20 7 25.7	6.272
13	7 21 2.07	2.1822	23 14 56.1	1.522	13	9 2 47.27	2.0517	20 1 6.7	6.361
14	7 23 12.93	2.1799	23 13 21.4	1.634	14	9 4 50.28	2.0487	19 54 42.4	6.449
15	7 25 23.66	2.1777	23 11 40.0	1.746	15	9 6 53.12	2.0459	19 48 12.8	6.537
16	7 27 34.26	2.1755	23 9 51.9	1.857	16	9 8 55.79	2.0430	19 41 38.0	6.623
17	7 29 44.72	2.1732	23 7 57.2	1.967	17	9 10 58.28	2.0401	19 34 58.0	6.709
18	7 31 55.04	2.1708	23 5 55.9	2.077	18	9 13 0.60	2.0372	19 28 12.9	6.795
19	7 34 5.22	2.1685	23 3 47.9	2.187	19	9 15 2.75	2.0344	19 21 22.6	6.880
20	7 36 15.26	2.1662	23 1 33.4	2.297	20	9 17 4.73	2.0316	19 14 27.3	6.964
21	7 38 25.16	2.1637	22 59 12.3	2.406	21	9 19 6.54	2.0287	19 7 26.9	7.048
22	7 40 34.90	2.1612	22 56 44.7	2.514	22	9 21 8.18	2.0260	19 0 21.5	7.132
23	7 42 44.50	2.1587	N.22 54 10.6	2.622	23	9 23 9.66	2.0232	N.18 53 11.1	7.215
WEDNESDAY 6.					FRIDAY 8.				
0	7 44 53.95	2.1562	N.22 51 30.1	2.729	0	9 25 10.96	2.0203	N.18 45 55.7	7.297
1	7 47 3.25	2.1537	22 48 43.1	2.837	1	9 27 12.10	2.0176	18 38 35.5	7.377
2	7 49 12.39	2.1511	22 45 49.7	2.943	2	9 29 13.07	2.0148	18 31 10.4	7.459
3	7 51 21.38	2.1485	22 42 49.9	3.050	3	9 31 13.88	2.0121	18 23 40.4	7.541
4	7 53 30.21	2.1458	22 39 43.7	3.156	4	9 33 14.52	2.0094	18 16 5.6	7.619
5	7 55 38.88	2.1432	22 36 31.2	3.261	5	9 35 15.01	2.0067	18 8 26.1	7.697
6	7 57 47.40	2.1406	22 33 12.4	3.366	6	9 37 15.33	2.0040	18 0 41.9	7.777
7	7 59 55.75	2.1378	22 29 47.3	3.470	7	9 39 15.49	2.0013	17 52 52.9	7.856
8	8 2 3.94	2.1352	22 26 16.0	3.574	8	9 41 15.49	1.9987	17 44 59.2	7.933
9	8 4 11.97	2.1325	22 22 38.4	3.677	9	9 43 15.34	1.9962	17 37 0.9	8.010
10	8 6 19.84	2.1297	22 18 54.7	3.780	10	9 45 15.03	1.9936	17 28 58.0	8.086
11	8 8 27.54	2.1269	22 15 4.8	3.883	11	9 47 14.57	1.9911	17 20 50.6	8.162
12	8 10 35.07	2.1242	22 11 8.7	3.985	12	9 49 13.96	1.9885	17 12 38.6	8.237
13	8 12 42.44	2.1213	22 7 6.6	4.086	13	9 51 13.19	1.9860	17 4 22.1	8.312
14	8 14 49.63	2.1185	22 2 58.4	4.187	14	9 53 12.28	1.9836	16 56 1.1	8.387
15	8 16 56.66	2.1157	21 58 44.1	4.288	15	9 55 11.22	1.9811	16 47 35.7	8.459
16	8 19 3.51	2.1128	21 54 23.8	4.387	16	9 57 10.01	1.9786	16 39 6.0	8.532
17	8 21 10.20	2.1100	21 49 57.6	4.487	17	9 59 8.65	1.9762	16 30 31.8	8.606
18	8 23 16.71	2.1071	21 45 25.4	4.586	18	10 1 7.16	1.9739	16 21 53.3	8.677
19	8 25 23.05	2.1042	21 40 47.3	4.684	19	10 3 5.52	1.9715	16 13 10.6	8.747
20	8 27 29.22	2.1013	21 36 3.3	4.782	20	10 5 3.74	1.9692	16 4 23.6	8.819
21	8 29 35.21	2.0984	21 31 13.5	4.879	21	10 7 1.83	1.9670	15 55 32.3	8.890
22	8 31 41.03	2.0955	21 26 17.8	4.977	22	10 8 59.78	1.9647	15 46 36.9	8.958
23	8 33 46.67	2.0926	21 21 16.3	5.072	23	10 10 57.60	1.9625	15 37 37.3	9.027
24	8 35 52.14	2.0897	N.21 16 9.1	5.167	24	10 12 55.28	1.9602	N.15 28 33.6	9.096

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 9.					MONDAY 11.				
0	10 12 55.28	1.9602	N. 15 28 33.6	9.096	0	11 45 16.07	1.9050	N. 7 4 20.2	11.683
1	10 14 52.83	1.9582	15 19 25.8	9.163	1	11 47 10.37	1.9050	6 52 38.0	11.722
2	10 16 50.26	1.9561	15 10 14.0	9.230	2	11 49 4.67	1.9051	6 40 53.5	11.761
3	10 18 47.56	1.9540	15 0 58.2	9.297	3	11 50 58.98	1.9052	6 29 6.7	11.798
4	10 20 44.74	1.9519	14 51 38.4	9.363	4	11 52 53.30	1.9053	6 17 17.7	11.835
5	10 22 41.79	1.9499	14 42 14.6	9.429	5	11 54 47.64	1.9057	6 5 26.5	11.871
6	10 24 38.73	1.9480	14 32 46.9	9.494	6	11 56 41.99	1.9060	5 53 33.2	11.907
7	10 26 35.55	1.9461	14 23 15.3	9.558	7	11 58 36.36	1.9064	5 41 37.7	11.942
8	10 28 32.26	1.9442	14 13 39.9	9.622	8	12 0 30.76	1.9068	5 29 40.2	11.976
9	10 30 28.86	1.9423	14 4 0.7	9.685	9	12 2 25.18	1.9073	5 17 40.6	12.009
10	10 32 25.34	1.9405	13 54 17.7	9.747	10	12 4 19.64	1.9079	5 5 39.1	12.041
11	10 34 21.72	1.9387	13 44 31.0	9.809	11	12 6 14.13	1.9085	4 53 35.7	12.073
12	10 36 17.99	1.9370	13 34 40.6	9.871	12	12 8 8.66	1.9092	4 41 30.3	12.105
13	10 38 14.16	1.9353	13 24 46.5	9.932	13	12 10 3.23	1.9098	4 29 23.1	12.136
14	10 40 10.23	1.9337	13 14 48.8	9.992	14	12 11 57.84	1.9106	4 17 14.0	12.166
15	10 42 6.20	1.9321	13 4 47.5	10.052	15	12 13 52.50	1.9115	4 5 3.2	12.195
16	10 44 2.08	1.9305	12 54 42.6	10.111	16	12 15 47.22	1.9124	3 52 50.6	12.224
17	10 45 57.86	1.9289	12 44 34.2	10.169	17	12 17 41.99	1.9133	3 40 36.3	12.252
18	10 47 53.55	1.9275	12 34 22.3	10.227	18	12 19 36.82	1.9143	3 28 20.4	12.278
19	10 49 49.16	1.9261	12 24 7.0	10.284	19	12 21 31.71	1.9153	3 16 2.9	12.305
20	10 51 44.68	1.9247	12 13 48.2	10.341	20	12 23 26.66	1.9165	3 3 43.8	12.331
21	10 53 40.12	1.9232	12 3 26.1	10.397	21	12 25 21.69	1.9177	2 51 23.2	12.355
22	10 55 35.47	1.9219	11 53 0.6	10.452	22	12 27 16.79	1.9189	2 39 1.2	12.379
23	10 57 30.75	1.9207	N. 11 42 31.8	10.507	23	12 29 11.96	1.9202	N. 2 26 37.7	12.402
SUNDAY 10.					TUESDAY 12.				
0	10 59 25.96	1.9195	N. 11 31 59.7	10.562	0	12 31 7.21	1.9216	N. 2 14 12.9	12.425
1	11 1 21.09	1.9183	11 21 24.4	10.616	1	12 33 2.55	1.9230	2 1 46.7	12.447
2	11 3 16.16	1.9172	11 10 45.8	10.669	2	12 34 57.98	1.9245	1 49 19.3	12.467
3	11 5 11.16	1.9161	11 0 4.1	10.721	3	12 36 53.50	1.9261	1 36 50.6	12.488
4	11 7 6.09	1.9151	10 49 19.3	10.773	4	12 38 49.11	1.9277	1 24 20.7	12.507
5	11 9 0.97	1.9142	10 38 31.3	10.825	5	12 40 44.82	1.9293	1 11 49.7	12.526
6	11 10 55.79	1.9132	10 27 40.3	10.875	6	12 42 40.63	1.9310	0 59 17.6	12.544
7	11 12 50.55	1.9123	10 16 46.3	10.925	7	12 44 36.54	1.9328	0 46 44.4	12.562
8	11 14 45.26	1.9114	10 5 49.3	10.975	8	12 46 32.56	1.9347	0 34 10.2	12.577
9	11 16 39.92	1.9107	9 54 49.3	11.024	9	12 48 28.70	1.9366	0 21 35.1	12.592
10	11 18 34.54	1.9099	9 43 46.4	11.072	10	12 50 24.95	1.9385	N. 0 8 59.1	12.607
11	11 20 29.11	1.9092	9 32 40.6	11.120	11	12 52 21.32	1.9406	S. 0 3 37.8	12.622
12	11 22 23.64	1.9086	9 21 32.0	11.167	12	12 54 17.82	1.9427	0 16 15.5	12.634
13	11 24 18.14	1.9080	9 10 20.6	11.213	13	12 56 14.44	1.9448	0 28 53.9	12.646
14	11 26 12.60	1.9075	8 59 6.4	11.259	14	12 58 11.20	1.9471	0 41 33.0	12.657
15	11 28 7.04	1.9070	8 47 49.5	11.305	15	13 0 8.09	1.9493	0 54 12.7	12.667
16	11 30 1.44	1.9065	8 36 29.8	11.350	16	13 2 5.11	1.9516	1 6 53.1	12.677
17	11 31 55.82	1.9062	8 25 7.5	11.393	17	13 4 2.28	1.9540	1 19 34.0	12.685
18	11 33 50.18	1.9058	8 13 42.6	11.437	18	13 5 59.59	1.9564	1 32 15.3	12.692
19	11 35 44.52	1.9056	8 2 15.1	11.480	19	13 7 57.05	1.9590	1 44 57.1	12.699
20	11 37 38.85	1.9053	7 50 45.0	11.522	20	13 9 54.67	1.9616	1 57 39.2	12.705
21	11 39 33.17	1.9052	7 39 12.5	11.562	21	13 11 52.44	1.9642	2 10 21.7	12.711
22	11 41 27.47	1.9050	7 27 37.5	11.604	22	13 13 50.37	1.9668	2 23 4.5	12.714
23	11 43 21.77	1.9050	7 16 0.0	11.644	23	13 15 48.46	1.9696	2 35 47.4	12.717
24	11 45 16.07	1.9050	N. 7 4 20.2	11.683	24	13 17 46.72	1.9724	S. 2 48 30.5	12.719

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 13.					FRIDAY 15.				
0	13 17 46.72	1.9724	S. 2 48 30.5	12.719	0	14 56 48.58	2.1746	S. 12 41 13.2	11.526
1	13 19 45.15	1.9753	3 1 13.7	12.720	1	14 58 59.22	2.1800	12 52 43.1	11.470
2	13 21 43.76	1.9782	3 13 56.9	12.720	2	15 1 10.18	2.1854	13 4 9.6	11.413
3	13 23 42.54	1.9812	3 26 40.1	12.719	3	15 3 21.47	2.1909	13 15 32.7	11.355
4	13 25 41.50	1.9842	3 39 23.2	12.717	4	15 5 33.09	2.1964	13 26 52.2	11.295
5	13 27 40.65	1.9874	3 52 6.2	12.715	5	15 7 45.04	2.2020	13 38 8.1	11.234
6	13 29 39.99	1.9906	4 4 49.0	12.711	6	15 9 57.33	2.2076	13 49 20.3	11.172
7	13 31 39.52	1.9938	4 17 31.5	12.706	7	15 12 9.95	2.2132	14 0 28.7	11.107
8	13 33 39.25	1.9971	4 30 13.7	12.700	8	15 14 22.91	2.2188	14 11 33.2	11.042
9	13 35 39.17	2.0004	4 42 55.5	12.693	9	15 16 36.21	2.2245	14 22 33.7	10.975
10	13 37 39.30	2.0039	4 55 36.9	12.686	10	15 18 49.85	2.2302	14 33 30.2	10.907
11	13 39 39.64	2.0074	5 8 17.8	12.677	11	15 21 3.83	2.2358	14 44 22.6	10.837
12	13 41 40.19	2.0109	5 20 58.1	12.667	12	15 23 18.15	2.2416	14 55 10.7	10.766
13	13 43 40.95	2.0145	5 33 37.8	12.655	13	15 25 32.82	2.2473	15 5 54.5	10.693
14	13 45 41.93	2.0182	5 46 16.7	12.642	14	15 27 47.83	2.2531	15 16 33.9	10.620
15	13 47 43.13	2.0219	5 58 54.9	12.630	15	15 30 3.19	2.2589	15 27 8.9	10.545
16	13 49 44.56	2.0257	6 11 32.3	12.616	16	15 32 18.90	2.2647	15 37 39.3	10.467
17	13 51 46.22	2.0296	6 24 8.8	12.601	17	15 34 34.96	2.2705	15 48 5.0	10.388
18	13 53 48.11	2.0334	6 36 44.4	12.584	18	15 36 51.36	2.2763	15 58 25.9	10.308
19	13 55 50.23	2.0373	6 49 18.9	12.566	19	15 39 8.12	2.2822	16 8 42.0	10.227
20	13 57 52.59	2.0413	7 1 52.3	12.547	20	15 41 25.23	2.2881	16 18 53.1	10.144
21	13 59 55.19	2.0454	7 14 24.6	12.527	21	15 43 42.69	2.2939	16 28 59.3	10.061
22	14 1 58.04	2.0495	7 26 55.6	12.506	22	15 46 0.50	2.2997	16 39 0.4	9.974
23	14 4 1.13	2.0537	S. 7 39 25.3	12.484	23	15 48 18.66	2.3057	S. 16 48 56.2	9.887
THURSDAY 14.					SATURDAY 16.				
0	14 6 4.48	2.0579	S. 7 51 53.7	12.461	0	15 50 37.18	2.3116	S. 16 58 46.8	9.798
1	14 8 8.08	2.0622	8 4 20.6	12.436	1	15 52 56.05	2.3174	17 8 32.0	9.708
2	14 10 11.94	2.0665	8 16 46.0	12.411	2	15 55 15.27	2.3233	17 18 11.8	9.617
3	14 12 16.06	2.0709	8 29 9.9	12.384	3	15 57 34.85	2.3292	17 27 46.0	9.523
4	14 14 20.45	2.0754	8 41 32.1	12.356	4	15 59 54.78	2.3351	17 37 14.5	9.428
5	14 16 25.11	2.0799	8 53 52.6	12.326	5	16 2 15.06	2.3409	17 46 37.4	9.332
6	14 18 30.04	2.0844	9 6 11.2	12.295	6	16 4 35.69	2.3467	17 55 54.4	9.234
7	14 20 35.24	2.0890	9 18 28.0	12.264	7	16 6 56.67	2.3526	18 5 5.5	9.135
8	14 22 40.72	2.0937	9 30 42.9	12.231	8	16 9 18.00	2.3584	18 14 10.6	9.035
9	14 24 46.48	2.0984	9 42 55.7	12.196	9	16 11 39.68	2.3642	18 23 9.7	8.933
10	14 26 52.53	2.1032	9 55 6.4	12.161	10	16 14 1.71	2.3701	18 32 2.6	8.830
11	14 28 58.87	2.1080	10 7 15.0	12.124	11	16 16 24.09	2.3758	18 40 49.3	8.725
12	14 31 5.49	2.1128	10 19 21.3	12.086	12	16 18 46.81	2.3816	18 49 29.6	8.618
13	14 33 12.40	2.1177	10 31 25.3	12.047	13	16 21 9.88	2.3873	18 58 3.5	8.511
14	14 35 19.61	2.1227	10 43 26.9	12.006	14	16 23 33.29	2.3930	19 6 30.9	8.402
15	14 37 27.12	2.1277	10 55 26.0	11.963	15	16 25 57.04	2.3987	19 14 51.7	8.291
16	14 39 34.94	2.1327	11 7 22.5	11.920	16	16 28 21.13	2.4042	19 23 5.8	8.179
17	14 41 43.05	2.1377	11 19 16.4	11.876	17	16 30 45.55	2.4098	19 31 13.2	8.066
18	14 43 51.47	2.1429	11 31 7.6	11.830	18	16 33 10.31	2.4154	19 39 13.7	7.951
19	14 46 0.20	2.1481	11 42 56.0	11.782	19	16 35 35.40	2.4210	19 47 7.3	7.834
20	14 48 9.24	2.1533	11 54 41.5	11.734	20	16 38 0.83	2.4265	19 54 53.8	7.717
21	14 50 18.60	2.1586	12 6 24.1	11.684	21	16 40 26.58	2.4319	20 2 33.3	7.598
22	14 52 28.27	2.1639	12 18 3.6	11.632	22	16 42 52.66	2.4373	20 10 5.6	7.477
23	14 54 38.27	2.1692	12 29 40.0	11.580	23	16 45 19.06	2.4427	20 17 30.6	7.356
24	14 56 48.58	2.1746	S. 12 41 13.2	11.526	24	16 47 45.78	2.4480	S. 20 24 48.3	7.232

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 17.					TUESDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	16 47 45.78	2.4480	S. 20 24 48.3	7.232	0	18 49 52.49	2.6007	S. 23 29 21.6	-0.147
1	16 50 12.82	2.4538	20 31 58.5	7.108	1	18 52 28.54	2.6010	23 29 25.5	+0.015
2	16 52 40.17	2.4584	20 39 1.3	6.983	2	18 55 4.61	2.6012	23 29 19.8	0.177
3	16 55 7.83	2.4635	20 45 56.5	6.856	3	18 57 40.69	2.6014	23 29 4.3	0.338
4	16 57 35.79	2.4686	20 52 44.0	6.727	4	19 0 16.78	2.6014	23 28 39.2	0.500
5	17 0 4.06	2.4737	20 59 23.8	6.598	5	19 2 52.86	2.6012	23 28 4.3	0.662
6	17 2 32.63	2.4786	21 5 55.8	6.467	6	19 5 28.93	2.6010	23 27 19.8	0.822
7	17 5 1.49	2.4835	21 12 19.9	6.335	7	19 8 4.98	2.6006	23 26 25.6	0.984
8	17 7 30.65	2.4883	21 18 36.0	6.202	8	19 10 41.00	2.6001	23 25 21.7	1.146
9	17 10 0.09	2.4930	21 24 44.1	6.068	9	19 13 16.99	2.5995	23 24 8.1	1.307
10	17 12 29.81	2.4977	21 30 44.2	5.933	10	19 15 52.94	2.5987	23 22 44.8	1.468
11	17 14 59.81	2.5022	21 36 36.1	5.796	11	19 18 28.84	2.5978	23 21 11.9	1.628
12	17 17 30.08	2.5067	21 42 19.7	5.657	12	19 21 4.68	2.5968	23 19 29.4	1.789
13	17 20 0.62	2.5112	21 47 55.0	5.519	13	19 23 40.46	2.5957	23 17 37.2	1.950
14	17 22 31.43	2.5156	21 53 22.0	5.379	14	19 26 16.16	2.5943	23 15 35.4	2.109
15	17 25 2.49	2.5198	21 58 40.5	5.238	15	19 28 51.78	2.5930	23 13 24.1	2.268
16	17 27 33.81	2.5240	22 3 50.5	5.096	16	19 31 27.32	2.5915	23 11 3.2	2.427
17	17 30 5.37	2.5281	22 8 52.0	4.952	17	19 34 2.76	2.5899	23 8 32.8	2.587
18	17 32 37.18	2.5321	22 13 44.8	4.808	18	19 36 38.11	2.5882	23 5 52.8	2.745
19	17 35 9.22	2.5359	22 18 29.0	4.663	19	19 39 13.35	2.5863	23 3 3.4	2.902
20	17 37 41.49	2.5397	22 23 4.4	4.517	20	19 41 48.47	2.5843	23 0 4.5	3.060
21	17 40 13.99	2.5435	22 27 31.0	4.370	21	19 44 23.47	2.5823	22 56 56.2	3.217
22	17 42 46.71	2.5471	22 31 48.8	4.222	22	19 46 58.35	2.5802	22 53 38.5	3.372
23	17 45 19.64	2.5505	S. 22 35 57.7	4.073	23	19 49 33.09	2.5779	S. 22 50 11.5	3.528
MONDAY 18.					WEDNESDAY 20.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	17 47 52.77	2.5539	S. 22 39 57.6	3.923	0	19 52 7.70	2.5796	S. 22 46 35.1	3.683
1	17 50 26.11	2.5572	22 43 48.5	3.773	1	19 54 42.16	2.5790	22 42 49.5	3.837
2	17 52 59.64	2.5604	22 47 30.4	3.622	2	19 57 16.46	2.5783	22 38 54.6	3.992
3	17 55 33.36	2.5635	22 51 3.1	3.469	3	19 59 50.60	2.5676	22 34 50.5	4.144
4	17 58 7.26	2.5665	22 54 26.7	3.317	4	20 2 24.57	2.5647	22 30 37.3	4.296
5	18 0 41.34	2.5693	22 57 41.1	3.163	5	20 4 58.37	2.5619	22 26 15.0	4.447
6	18 3 15.58	2.5720	23 0 46.3	3.009	6	20 7 32.00	2.5589	22 21 43.6	4.598
7	18 5 49.98	2.5747	23 3 42.2	2.854	7	20 10 5.44	2.5557	22 17 3.2	4.747
8	18 8 24.54	2.5772	23 6 28.8	2.698	8	20 12 38.69	2.5526	22 12 13.9	4.897
9	18 10 59.25	2.5796	23 9 6.0	2.542	9	20 15 11.75	2.5493	22 7 15.6	5.045
10	18 13 34.09	2.5818	23 11 33.8	2.385	10	20 17 44.61	2.5460	22 2 8.5	5.192
11	18 16 9.07	2.5841	23 13 52.2	2.227	11	20 20 17.27	2.5425	21 56 52.5	5.339
12	18 18 44.18	2.5861	23 16 1.1	2.070	12	20 22 49.71	2.5389	21 51 27.8	5.484
13	18 21 19.40	2.5879	23 18 0.6	1.912	13	20 25 21.94	2.5353	21 45 54.4	5.629
14	18 23 54.73	2.5897	23 19 50.5	1.752	14	20 27 53.95	2.5316	21 40 12.3	5.772
15	18 26 30.17	2.5914	23 21 30.9	1.593	15	20 30 25.73	2.5278	21 34 21.7	5.914
16	18 29 5.70	2.5929	23 23 1.7	1.433	16	20 32 57.29	2.5240	21 28 22.6	6.056
17	18 31 41.32	2.5943	23 24 22.9	1.273	17	20 35 28.61	2.5200	21 22 15.0	6.197
18	18 34 17.02	2.5956	23 25 34.5	1.113	18	20 37 59.69	2.5160	21 15 59.0	6.337
19	18 36 52.79	2.5967	23 26 36.5	0.953	19	20 40 30.53	2.5120	21 9 34.6	6.475
20	18 39 28.63	2.5978	23 27 28.9	0.792	20	20 43 1.13	2.5079	21 3 2.0	6.612
21	18 42 4.53	2.5987	23 28 11.6	0.631	21	20 45 31.48	2.5038	20 56 21.2	6.748
22	18 44 40.47	2.5994	23 28 44.6	0.469	22	20 48 1.58	2.4995	20 49 32.2	6.883
23	18 47 16.46	2.6002	23 29 7.9	0.308	23	20 50 31.42	2.4951	20 42 35.2	7.017
24	18 49 52.49	2.6007	S. 23 29 21.6	-0.147	24	20 53 0.99	2.4907	S. 20 35 30.2	7.149

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 21.					SATURDAY 23.				
0	20 53 0.99	2.4907	S. 20 35 30.2	7.149	0	22 47 4.11	2.2617	S. 12 43 49.6	11.981
1	20 55 30.30	2.4863	20 28 17.3	7.281	1	22 49 19.68	2.2572	12 31 48.7	12.047
2	20 57 59.35	2.4819	20 20 56.5	7.412	2	22 51 34.98	2.2528	12 19 43.9	12.112
3	21 0 28.13	2.4774	20 13 27.9	7.541	3	22 53 50.02	2.2486	12 7 35.2	12.177
4	21 2 56.64	2.4728	20 5 51.6	7.668	4	22 56 4.81	2.2444	11 55 22.7	12.240
5	21 5 24.87	2.4682	19 58 7.7	7.795	5	22 58 19.35	2.2402	11 43 6.4	12.301
6	21 7 52.82	2.4636	19 50 16.2	7.921	6	23 0 33.63	2.2359	11 30 46.6	12.360
7	21 10 20.50	2.4590	19 42 17.2	8.045	7	23 2 47.66	2.2318	11 18 23.2	12.419
8	21 12 47.90	2.4542	19 34 10.8	8.167	8	23 5 1.45	2.2278	11 5 56.3	12.477
9	21 15 15.01	2.4494	19 25 57.1	8.289	9	23 7 15.00	2.2237	10 53 26.0	12.532
10	21 17 41.83	2.4447	19 17 36.1	8.411	10	23 9 28.30	2.2197	10 40 52.4	12.587
11	21 20 8.37	2.4399	19 9 7.8	8.530	11	23 11 41.37	2.2158	10 28 15.6	12.640
12	21 22 34.62	2.4351	19 0 32.5	8.647	12	23 13 54.20	2.2119	10 15 35.6	12.692
13	21 25 0.58	2.4302	18 51 50.1	8.764	13	23 16 6.80	2.2082	10 2 52.6	12.742
14	21 27 26.25	2.4253	18 43 0.8	8.879	14	23 18 19.18	2.2044	9 50 6.6	12.791
15	21 29 51.62	2.4204	18 34 4.6	8.993	15	23 20 31.33	2.2007	9 37 17.7	12.839
16	21 32 16.70	2.4156	18 25 1.6	9.106	16	23 22 43.26	2.1970	9 24 25.9	12.886
17	21 34 41.49	2.4107	18 15 51.9	9.217	17	23 24 54.97	2.1934	9 11 31.4	12.930
18	21 37 5.98	2.4057	18 6 35.5	9.327	18	23 27 6.47	2.1898	8 58 34.3	12.973
19	21 39 30.17	2.4007	17 57 12.6	9.435	19	23 29 17.75	2.1863	8 45 34.6	13.016
20	21 41 54.07	2.3958	17 47 43.3	9.542	20	23 31 28.83	2.1829	8 32 32.4	13.057
21	21 44 17.67	2.3908	17 38 7.5	9.649	21	23 33 39.70	2.1795	8 19 27.8	13.097
22	21 46 40.97	2.3858	17 28 25.4	9.753	22	23 35 50.37	2.1762	8 6 20.8	13.136
23	21 49 3.97	2.3809	S. 17 18 37.1	9.857	23	23 38 0.84	2.1729	S. 7 53 11.5	13.172
FRIDAY 22.					SUNDAY 24.				
0	21 51 26.68	2.3760	S. 17 8 42.6	9.958	0	23 40 11.12	2.1697	S. 7 40 0.1	13.207
1	21 53 49.09	2.3710	16 58 42.1	10.058	1	23 42 21.21	2.1666	7 26 46.6	13.242
2	21 56 11.20	2.3660	16 48 35.6	10.157	2	23 44 31.11	2.1634	7 13 31.0	13.276
3	21 58 33.01	2.3611	16 38 23.2	10.255	3	23 46 40.82	2.1604	7 0 13.5	13.307
4	22 0 54.53	2.3562	16 28 5.0	10.351	4	23 48 50.36	2.1575	6 46 54.1	13.338
5	22 3 15.75	2.3512	16 17 41.1	10.446	5	23 50 59.72	2.1545	6 33 32.9	13.367
6	22 5 36.67	2.3462	16 7 11.5	10.539	6	23 53 8.90	2.1517	6 20 10.0	13.396
7	22 7 57.30	2.3413	15 56 36.4	10.631	7	23 55 17.92	2.1489	6 6 45.4	13.422
8	22 10 17.63	2.3364	15 45 55.8	10.722	8	23 57 26.77	2.1462	5 53 19.3	13.447
9	22 12 37.67	2.3316	15 35 9.8	10.811	9	23 59 35.46	2.1435	5 39 51.7	13.472
10	22 14 57.42	2.3267	15 24 18.5	10.899	10	0 1 43.99	2.1409	5 26 22.7	13.495
11	22 17 16.88	2.3219	15 13 21.9	10.986	11	0 3 52.37	2.1383	5 12 52.3	13.517
12	22 19 36.05	2.3171	15 2 20.2	11.071	12	0 6 0.59	2.1358	4 59 20.7	13.537
13	22 21 54.93	2.3123	14 51 13.4	11.154	13	0 8 8.67	2.1335	4 45 47.9	13.556
14	22 24 13.53	2.3076	14 40 1.7	11.236	14	0 10 16.61	2.1312	4 32 14.0	13.574
15	22 26 31.84	2.3028	14 28 45.1	11.317	15	0 12 24.41	2.1288	4 18 39.0	13.591
16	22 28 49.87	2.2981	14 17 23.7	11.396	16	0 14 32.07	2.1266	4 5 3.1	13.606
17	22 31 7.61	2.2934	14 5 57.6	11.473	17	0 16 39.60	2.1244	3 51 26.3	13.620
18	22 33 25.08	2.2888	13 54 26.9	11.550	18	0 18 47.00	2.1223	3 37 48.7	13.632
19	22 35 42.27	2.2842	13 42 51.6	11.626	19	0 20 54.28	2.1202	3 24 10.4	13.644
20	22 37 59.18	2.2796	13 31 11.8	11.700	20	0 23 1.43	2.1182	3 10 31.4	13.655
21	22 40 15.82	2.2750	13 19 27.6	11.772	21	0 25 8.47	2.1164	2 56 51.8	13.665
22	22 42 32.18	2.2705	13 7 39.1	11.843	22	0 27 15.40	2.1146	2 43 11.6	13.673
23	22 44 48.28	2.2661	12 55 46.4	11.912	23	0 29 22.22	2.1127	2 29 31.0	13.679
24	22 47 4.11	2.2617	S. 12 43 49.6	11.981	24	0 31 28.93	2.1110	S. 2 15 50.1	13.684

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 25.					WEDNESDAY 27.				
0	h m s		° ' "	"	0	h m s		° ' "	"
0	31 28.93	2.1110	S. 2 15 50.1	13.684	0	2 11 58.40	2.0977	N. 8 25 14.1	12.592
1	33 35.54	2.1094	2 2 8.9	13.689	1	2 14 4.29	2.0986	8 37 48.1	12.542
2	35 42.06	2.1078	1 48 27.4	13.692	2	2 16 10.23	2.0996	8 50 19.1	12.491
3	37 48.48	2.1062	1 34 45.8	13.694	3	2 18 16.24	2.1007	9 2 47.0	12.438
4	39 54.81	2.1047	1 21 4.1	13.695	4	2 20 22.32	2.1019	9 15 11.7	12.385
5	42 1.05	2.1033	1 7 22.4	13.695	5	2 22 28.47	2.1030	9 27 33.2	12.332
6	44 7.21	2.1020	0 53 40.7	13.693	6	2 24 34.68	2.1042	9 39 51.5	12.277
7	46 13.29	2.1007	0 39 59.2	13.690	7	2 26 40.97	2.1054	9 52 6.4	12.220
8	48 19.29	2.0995	0 26 17.9	13.687	8	2 28 47.33	2.1067	10 4 17.9	12.163
9	50 25.23	2.0983	S. 0 12 36.8	13.682	9	2 30 53.77	2.1080	10 16 26.0	12.105
10	52 31.09	2.0972	N. 0 1 3.9	13.675	10	2 33 0.29	2.1093	10 28 30.5	12.046
11	54 36.89	2.0962	0 14 44.2	13.667	11	2 35 6.89	2.1107	10 40 31.5	11.986
12	56 42.63	2.0952	0 28 24.0	13.658	12	2 37 13.57	2.1121	10 52 28.8	11.924
13	58 48.32	2.0943	0 42 3.2	13.648	13	2 39 20.34	2.1135	11 4 22.4	11.862
14	1 0 53.95	2.0934	0 55 41.8	13.637	14	2 41 27.19	2.1150	11 16 12.2	11.798
15	1 2 59.53	2.0927	1 9 19.7	13.626	15	2 43 34.14	2.1165	11 27 58.2	11.734
16	1 5 5.07	2.0919	1 22 56.9	13.612	16	2 45 41.17	2.1180	11 39 40.3	11.669
17	1 7 10.56	2.0912	1 36 33.2	13.597	17	2 47 48.30	2.1196	11 51 18.5	11.603
18	1 9 16.01	2.0906	1 50 8.6	13.582	18	2 49 55.52	2.1212	12 2 52.7	11.536
19	1 11 21.43	2.0901	2 3 43.0	13.565	19	2 52 2.84	2.1228	12 14 22.8	11.467
20	1 13 26.82	2.0896	2 17 16.4	13.547	20	2 54 10.26	2.1244	12 25 48.8	11.398
21	1 15 32.18	2.0892	2 30 48.7	13.528	21	2 56 17.77	2.1261	12 37 10.6	11.328
22	1 17 37.52	2.0887	2 44 19.8	13.508	22	2 58 25.39	2.1278	12 48 28.2	11.257
23	1 19 42.83	2.0884	N. 2 57 49.7	13.487	23	3 0 33.11	2.1295	N. 12 59 41.5	11.185
TUESDAY 26.					THURSDAY 28.				
0	1 21 48.13	2.0882	N. 3 11 18.2	13.463	0	3 2 40.93	2.1312	N. 13 10 50.4	11.112
1	1 23 53.41	2.0880	3 24 45.3	13.440	1	3 4 48.86	2.1330	13 21 54.9	11.038
2	1 25 58.69	2.0878	3 38 11.0	13.416	2	3 6 56.89	2.1347	13 32 55.0	10.963
3	1 28 3.95	2.0877	3 51 35.2	13.390	3	3 9 5.02	2.1365	13 43 50.5	10.887
4	1 30 9.21	2.0877	4 4 57.8	13.362	4	3 11 13.27	2.1384	13 54 41.5	10.811
5	1 32 14.47	2.0877	4 18 18.7	13.334	5	3 13 21.63	2.1402	14 5 27.8	10.733
6	1 34 19.73	2.0877	4 31 37.9	13.306	6	3 15 30.09	2.1420	14 16 9.5	10.655
7	1 36 25.00	2.0878	4 44 55.4	13.276	7	3 17 38.67	2.1439	14 26 46.4	10.575
8	1 38 30.27	2.0880	4 58 11.0	13.243	8	3 19 47.36	2.1457	14 37 18.5	10.494
9	1 40 35.56	2.0883	5 11 24.6	13.211	9	3 21 56.16	2.1477	14 47 45.7	10.412
10	1 42 40.87	2.0886	5 24 36.3	13.177	10	3 24 5.08	2.1496	14 58 8.0	10.331
11	1 44 46.19	2.0888	5 37 45.9	13.142	11	3 26 14.11	2.1514	15 8 25.4	10.247
12	1 46 51.53	2.0892	5 50 53.4	13.107	12	3 28 23.25	2.1533	15 18 37.7	10.163
13	1 48 56.90	2.0897	6 3 58.7	13.070	13	3 30 32.51	2.1552	15 28 45.0	10.078
14	1 51 2.29	2.0902	6 17 1.8	13.032	14	3 32 41.88	2.1572	15 38 47.1	9.992
15	1 53 7.72	2.0907	6 30 2.5	12.992	15	3 34 51.37	2.1591	15 48 44.1	9.906
16	1 55 13.18	2.0913	6 43 0.8	12.952	16	3 37 0.97	2.1610	15 58 35.8	9.818
17	1 57 18.68	2.0919	6 55 56.7	12.911	17	3 39 10.69	2.1630	16 8 22.3	9.731
18	1 59 24.21	2.0926	7 8 50.1	12.868	18	3 41 20.53	2.1649	16 18 3.5	9.641
19	2 1 29.79	2.0933	7 21 40.9	12.825	19	3 43 30.48	2.1668	16 27 39.2	9.551
20	2 3 35.41	2.0941	7 34 29.1	12.781	20	3 45 40.55	2.1688	16 37 9.6	9.461
21	2 5 41.08	2.0949	7 47 14.6	12.735	21	3 47 50.74	2.1707	16 46 34.5	9.368
22	2 7 46.80	2.0957	7 59 57.3	12.687	22	3 50 1.04	2.1727	16 55 53.8	9.276
23	2 9 52.57	2.0967	8 12 37.1	12.640	23	3 52 11.47	2.1747	17 5 7.6	9.182
24	2 11 58.40	2.0977	N. 8 25 14.1	12.592	24	3 54 22.01	2.1766	N. 17 14 15.7	9.088

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 29.					SUNDAY 31.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	3 54 22.01	2.1766	N.17 14 15.7	9.088	0	5 40 40.38	2.2398	N.22 29 41.3	3.856
1	3 56 32.66	2.1785	17 23 18.2	8.994	1	5 42 54.78	2.2408	22 33 29.1	3.737
2	3 58 43.43	2.1804	17 32 15.0	8.898	2	5 45 9.20	2.2405	22 37 9.8	3.618
3	4 0 54.31	2.1822	17 41 6.0	8.802	3	5 47 23.64	2.2407	22 40 43.3	3.499
4	4 3 5.30	2.1842	17 49 51.2	8.705	4	5 49 38.08	2.2407	22 44 9.7	3.380
5	4 5 16.41	2.1861	17 58 30.6	8.607	5	5 51 52.52	2.2407	22 47 28.9	3.259
6	4 7 27.63	2.1879	18 7 4.1	8.508	6	5 54 6.97	2.2408	22 50 40.8	3.139
7	4 9 38.96	2.1897	18 15 31.6	8.409	7	5 56 21.42	2.2408	22 53 45.6	3.020
8	4 11 50.40	2.1917	18 23 53.2	8.309	8	5 58 35.87	2.2407	22 56 43.2	2.900
9	4 14 1.96	2.1935	18 32 8.7	8.208	9	6 0 50.31	2.2406	22 59 33.6	2.780
10	4 16 13.62	2.1952	18 40 18.2	8.107	10	6 3 4.74	2.2403	23 2 16.8	2.660
11	4 18 25.39	2.1970	18 48 21.6	8.005	11	6 5 19.15	2.2400	23 4 52.8	2.540
12	4 20 37.26	2.1987	18 56 18.8	7.902	12	6 7 33.54	2.2397	23 7 21.6	2.420
13	4 22 49.24	2.2005	19 4 9.8	7.798	13	6 9 47.91	2.2393	23 9 43.2	2.299
14	4 25 1.32	2.2022	19 11 54.6	7.695	14	6 12 2.26	2.2389	23 11 57.5	2.179
15	4 27 13.51	2.2040	19 19 33.2	7.591	15	6 14 16.58	2.2383	23 14 4.7	2.059
16	4 29 25.80	2.2057	19 27 5.5	7.485	16	6 16 30.86	2.2377	23 16 4.6	1.938
17	4 31 38.19	2.2072	19 34 31.4	7.378	17	6 18 45.11	2.2372	23 17 57.3	1.818
18	4 33 50.67	2.2088	19 41 50.9	7.272	18	6 20 59.32	2.2365	23 19 42.8	1.698
19	4 36 3.25	2.2105	19 49 4.1	7.166	19	6 23 13.49	2.2358	23 21 21.1	1.578
20	4 38 15.93	2.2121	19 56 10.8	7.057	20	6 25 27.62	2.2350	23 22 52.2	1.458
21	4 40 28.70	2.2136	20 3 11.0	6.949	21	6 27 41.69	2.2341	23 24 16.1	1.338
22	4 42 41.56	2.2151	20 10 4.7	6.840	22	6 29 55.71	2.2332	23 25 32.8	1.218
23	4 44 54.51	2.2166	N.20 16 51.8	6.731	23	6 32 9.68	2.2322	N.23 26 42.3	1.098
SATURDAY 30.					MONDAY, JUNE 1.				
0	4 47 7.55	2.2180	N.20 23 32.4	6.622	0	6 34 23.58	2.2312	N.23 27 44.6	0.978
1	4 49 20.67	2.2194	20 30 6.4	6.511	PHASES OF THE MOON.				
2	4 51 33.88	2.2207	20 36 33.7	6.399					
3	4 53 47.16	2.2221	20 42 54.3	6.288					
4	4 56 0.53	2.2234	20 49 8.3	6.177					
5	4 58 13.97	2.2246	20 55 15.5	6.063					
6	5 0 27.48	2.2258	21 1 15.9	5.951					
7	5 2 41.07	2.2270	21 7 9.6	5.838					
8	5 4 54.72	2.2281	21 12 56.5	5.724					
9	5 7 8.44	2.2292	21 18 36.5	5.609					
10	5 9 22.23	2.2303	21 24 9.6	5.495					
11	5 11 36.08	2.2312	21 29 35.9	5.381					
12	5 13 49.98	2.2322	21 34 55.3	5.265					
13	5 16 3.94	2.2332	21 40 7.7	5.149					
14	5 18 17.96	2.2340	21 45 13.2	5.033					
15	5 20 32.02	2.2347	21 50 11.7	4.917					
16	5 22 46.13	2.2356	21 55 3.2	4.800					
17	5 25 0.29	2.2363	21 59 47.7	4.682					
18	5 27 14.49	2.2370	22 4 25.1	4.565					
19	5 29 28.73	2.2376	22 8 55.5	4.448					
20	5 31 43.00	2.2381	22 13 18.9	4.330					
21	5 33 57.30	2.2387	22 17 35.1	4.212					
22	5 36 11.64	2.2392	22 21 44.3	4.094					
23	5 38 26.00	2.2395	22 25 46.4	3.975					
24	5 40 40.38	2.2398	N.22 29 41.3	3.856					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
2	SUN W.	22 58 51	3079	24 27 26	3086	25 55 53	3094	27 24 10	3103
	Pollux E.	48 17 8	2701	46 40 30	2716	45 4 12	2732	43 28 15	2747
	JUPITER E.	60 47 35	2701	59 10 57	2716	57 34 38	2730	55 58 38	2744
3	SUN W.	34 42 39	3156	36 9 41	3168	37 36 29	3179	39 3 3	3191
	Pollux E.	35 33 48	2832	34 0 1	2849	32 26 37	2868	30 53 37	2887
	JUPITER E.	48 3 5	2811	46 28 52	2825	44 54 57	2838	43 21 19	2852
	Spica E.	125 8 15	2821	123 34 15	2833	122 0 30	2844	120 27 0	2855
4	SUN W.	46 12 19	3251	47 37 28	3263	49 2 23	3274	50 27 5	3285
	JUPITER E.	35 37 23	2916	34 5 25	2928	32 33 42	2941	31 2 15	2953
	Spica E.	112 43 7	2912	111 11 3	2923	109 39 13	2934	108 7 37	2945
5	SUN W.	57 27 25	3337	58 50 54	3347	60 14 11	3356	61 37 17	3365
	MARS W.	23 12 51	3229	24 38 26	3236	26 3 52	3243	27 29 10	3250
	JUPITER E.	23 28 43	3011	21 58 44	3022	20 28 59	3034	18 59 28	3045
	Spica E.	100 32 51	2993	99 2 30	3002	97 32 21	3011	96 2 22	3020
6	SUN W.	68 30 28	3403	69 52 41	3409	71 14 46	3415	72 36 45	3421
	MARS W.	34 33 41	3282	35 58 13	3288	37 22 39	3293	38 46 59	3298
	VENUS W.	23 25 22	3427	24 47 8	3427	26 8 54	3428	27 30 39	3428
	Spica E.	88 34 55	3056	87 5 52	3063	85 36 57	3069	84 8 9	3073
7	SUN W.	79 25 19	3441	80 46 49	3443	82 8 17	3445	83 29 42	3447
	MARS W.	45 47 22	3316	47 11 15	3318	48 35 6	3319	49 58 55	3321
	VENUS W.	34 19 26	3428	35 41 11	3428	37 2 56	3427	38 24 42	3426
	Spica E.	76 45 38	3095	75 17 23	3098	73 49 11	3100	72 21 2	3102
	Antares E.	122 39 13	3105	121 11 10	3106	119 43 8	3107	118 15 7	3107
8	SUN W.	90 16 33	3447	91 37 56	3445	92 59 21	3443	94 20 49	3440
	MARS W.	56 57 48	3319	58 21 37	3318	59 45 27	3316	61 9 20	3313
	VENUS W.	45 13 54	3416	46 35 52	3413	47 57 53	3410	49 19 58	3406
	Pollux W.	25 54 28	3160	27 21 25	3150	28 48 34	3141	30 15 55	3132
	JUPITER W.	12 12 13	3148	13 39 24	3140	15 6 46	3132	16 34 17	3125
	Spica E.	65 0 45	3107	63 32 44	3106	62 4 42	3106	60 36 40	3105
	Antares E.	110 54 59	3103	109 26 53	3101	107 58 45	3099	106 30 34	3096
9	SUN W.	101 9 5	3419	102 30 59	3414	103 53 0	3408	105 15 8	3401
	MARS W.	68 9 45	3292	69 34 5	3287	70 58 32	3281	72 23 7	3274
	VENUS W.	56 11 44	3379	57 34 25	3372	58 57 13	3365	60 20 9	3357
	Pollux W.	37 35 12	3090	39 3 33	3082	40 32 5	3074	42 0 46	3065
	JUPITER W.	23 53 44	3096	25 21 59	3089	26 50 22	3082	28 18 53	3075
	Spica E.	53 15 59	3094	51 47 42	3091	50 19 21	3087	48 50 56	3084
	Antares E.	99 8 35	3075	97 39 55	3070	96 11 9	3064	94 42 15	3057
10	SUN W.	112 7 51	3361	113 30 52	3352	114 54 3	3342	116 17 26	3332
	MARS W.	79 28 6	3234	80 53 35	3225	82 19 15	3215	83 45 6	3205
	VENUS W.	67 17 13	3313	68 41 10	3303	70 5 19	3292	71 29 40	3281
	Pollux W.	49 26 55	3019	50 56 44	3009	52 26 45	3009	53 56 59	2999
	JUPITER W.	35 43 44	3035	37 13 13	3026	38 42 53	3017	40 12 44	3007
	Spica E.	41 27 45	3065	39 58 53	3061	38 29 56	3058	37 0 55	3055
	Antares E.	87 15 40	3020	85 45 52	3012	84 15 54	3003	82 45 45	2993

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
2	SUN	W.	28 52 16	3113	30 20 11	3123	31 47 53	3133	33 15 23	3144
	Pollux	E.	41 52 38	2764	40 17 23	2780	38 42 29	2797	37 7 57	2815
	JUPITER	E.	54 22 55	2757	52 47 31	2771	51 12 25	2784	49 37 36	2798
3	SUN	W.	40 29 23	3203	41 55 28	3215	43 21 19	3227	44 46 56	3239
	Pollux	E.	29 21 2	2907	27 48 52	2929	26 17 10	2952	24 45 57	2977
	JUPITER	E.	41 47 58	2865	40 14 55	2878	38 42 8	2891	37 9 37	2904
	Spica	E.	118 53 44	2867	117 20 43	2879	115 47 57	2890	114 15 25	2901
4	SUN	W.	51 51 34	3296	53 15 50	3307	54 39 53	3317	56 3 45	3327
	JUPITER	E.	29 31 3	2965	28 0 6	2977	26 29 24	2988	24 58 56	3000
	Spica	E.	106 36 15	2955	105 5 6	2965	103 34 9	2974	102 3 24	2984
5	SUN	W.	63 0 14	3373	64 23 1	3381	65 45 38	3389	67 8 7	3396
	MARS	W.	28 54 20	3257	30 19 22	3264	31 44 16	3270	33 9 2	3276
	JUPITER	E.	17 30 11	3057	16 1 9	3070	14 32 23	3085	13 3 55	3101
	Spica	E.	94 32 34	3028	93 2 56	3035	91 33 27	3042	90 4 7	3049
6	SUN	W.	73 58 38	3426	75 20 25	3430	76 42 7	3434	78 3 45	3438
	MARS	W.	40 11 13	3302	41 35 22	3306	42 59 26	3310	44 23 26	3313
	VENUS	W.	28 52 24	3428	30 14 9	3427	31 35 55	3427	32 57 41	3428
	Spica	E.	82 39 27	3078	81 10 52	3083	79 42 22	3087	78 13 58	3091
7	SUN	W.	84 51 5	3448	86 12 27	3448	87 33 49	3448	88 55 11	3448
	MARS	W.	51 22 42	3322	52 46 28	3322	54 10 14	3321	55 34 1	3320
	VENUS	W.	39 46 29	3425	41 8 17	3423	42 30 7	3421	43 51 59	3419
	Spica	E.	70 52 55	3104	69 24 51	3105	67 56 48	3106	66 28 46	3107
	Antares	E.	116 47 6	3108	115 19 6	3107	113 51 5	3106	112 23 3	3105
8	SUN	W.	95 42 20	3437	97 3 54	3433	98 25 33	3429	99 47 16	3424
	MARS	W.	62 33 17	3310	63 57 17	3306	65 21 21	3302	66 45 30	3297
	VENUS	W.	50 42 8	3401	52 4 23	3396	53 26 44	3391	54 49 11	3385
	Pollux	W.	31 43 26	3123	33 11 7	3114	34 38 59	3106	36 7 0	3098
	JUPITER	W.	18 1 56	3119	19 29 43	3114	20 57 36	3108	22 25 36	3102
	Spica	E.	59 8 36	3103	57 40 31	3101	56 12 23	3099	54 44 13	3096
	Antares	E.	105 2 19	3092	103 34 0	3089	102 5 37	3085	100 37 9	3080
9	SUN	W.	106 37 23	3394	107 59 46	3386	109 22 19	3378	110 45 0	3370
	MARS	W.	73 47 49	3267	75 12 39	3259	76 37 39	3251	78 2 48	3243
	VENUS	W.	61 43 14	3349	63 6 29	3341	64 29 53	3332	65 53 28	3323
	Pollux	W.	43 29 38	3057	44 58 40	3048	46 27 53	3039	47 57 18	3029
	JUPITER	W.	29 47 33	3068	31 16 22	3061	32 45 19	3053	34 14 26	3044
	Spica	E.	47 22 27	3080	45 53 53	3077	44 25 15	3073	42 56 32	3069
	Antares	E.	93 13 13	3051	91 44 3	3044	90 14 45	3037	88 45 18	3028
10	SUN	W.	117 41 0	3322	119 4 46	3311	120 28 45	3300	121 52 57	3288
	MARS	W.	85 11 9	3194	86 37 25	3184	88 3 53	3173	89 30 35	3161
	VENUS	W.	72 54 14	3270	74 19 1	3258	75 44 2	3245	77 9 18	3233
	Pollux	W.	55 27 26	2978	56 58 6	2967	58 29 0	2956	60 0 8	2944
	JUPITER	W.	41 42 48	2997	43 13 4	2987	44 43 33	2976	46 14 15	2965
	Spica	E.	35 31 50	3053	34 2 43	3051	32 33 33	3049	31 4 21	3049
	Antares	E.	81 15 24	2984	79 44 51	2975	78 14 7	2965	76 43 10	2954

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
11	SUN	W.	123 17 23	3276	124 42 3	3264	126 6 56	3252	127 32 4	3239
	MARS	W.	90 57 30	3149	92 24 40	3137	93 52 4	3125	95 19 43	3112
	VENUS	W.	78 34 48	3220	80 0 33	3207	81 26 34	3194	82 52 50	3180
	Pollux	W.	61 31 31	2932	63 3 9	2920	64 35 3	2908	66 7 12	2895
	JUPITER	W.	47 45 11	2954	49 16 21	2942	50 47 46	2930	52 19 26	2918
	Spica	E.	29 35 9	3051	28 5 59	3055	26 36 55	3061	25 7 58	3070
	Antares	E.	75 11 59	2943	73 40 35	2932	72 8 57	2921	70 37 5	2910
	α Aquilæ	E.	118 25 20	3827	117 10 46	3792	115 55 35	3758	114 39 48	3724
12	MARS	W.	102 41 59	3045	104 11 16	3031	105 40 51	3017	107 10 43	3002
	VENUS	W.	90 8 23	3109	91 36 22	3093	93 4 40	3078	94 33 16	3064
	Pollux	W.	73 52 2	2830	75 25 51	2816	76 59 58	2802	78 34 23	2788
	JUPITER	W.	60 1 44	2854	61 35 2	2841	63 8 36	2827	64 42 28	2813
	Antares	E.	62 54 4	2850	61 20 42	2838	59 47 4	2827	58 13 11	2815
	α Aquilæ	E.	108 12 28	3576	106 53 28	3550	105 33 59	3525	104 14 2	3501
13	VENUS	W.	102 1 0	2985	103 31 31	2969	105 2 22	2954	106 33 33	2939
	Pollux	W.	86 31 3	2718	88 7 19	2704	89 43 54	2689	91 20 48	2675
	JUPITER	W.	72 36 24	2743	74 12 7	2729	75 48 8	2715	77 24 28	2701
	Antares	E.	50 19 48	2755	48 44 21	2744	47 8 39	2733	45 32 42	2722
	α Aquilæ	E.	97 27 59	3395	96 5 37	3377	94 42 55	3360	93 19 53	3344
14	VENUS	W.	114 14 22	2861	115 47 31	2845	117 21 0	2830	118 54 49	2815
	Pollux	W.	99 30 3	2606	101 8 50	2592	102 47 56	2578	104 27 21	2565
	JUPITER	W.	85 30 55	2630	87 9 9	2616	88 47 42	2602	90 26 34	2588
	Antares	E.	37 29 37	2677	35 52 26	2671	34 15 7	2665	32 37 40	2661
	α Aquilæ	E.	86 20 19	3276	84 55 40	3267	83 30 49	3258	82 5 48	3250
	Fomalhaut	E.	120 2 9	2839	118 28 32	2818	116 54 27	2797	115 19 55	2776
15	JUPITER	W.	98 45 31	2523	100 26 12	2511	102 7 10	2499	103 48 25	2487
	Spica	W.	23 41 18	2675	25 18 33	2641	26 56 33	2610	28 35 15	2582
	α Aquilæ	E.	74 58 52	3231	73 33 19	3232	72 7 47	3235	70 42 19	3239
	Fomalhaut	E.	107 20 55	2687	105 43 58	2671	104 6 39	2655	102 28 59	2641
	α Pegasi	E.	122 38 59	3067	121 10 9	3034	119 40 39	3004	118 10 31	2975
16	JUPITER	W.	112 18 46	2431	114 1 36	2421	115 44 40	2411	117 27 58	2402
	Spica	W.	36 57 16	2475	38 39 4	2459	40 21 15	2443	42 3 48	2429
	α Aquilæ	E.	63 37 8	3296	62 12 52	3315	60 48 58	3338	59 25 31	3365
	Fomalhaut	E.	94 16 2	2577	92 36 36	2567	90 56 56	2557	89 17 2	2548
	α Pegasi	E.	110 31 24	2854	108 58 5	2835	107 24 22	2816	105 50 15	2798
17	Spica	W.	50 41 14	2370	52 25 33	2360	54 10 5	2351	55 54 50	2342
	α Aquilæ	E.	52 37 22	3564	51 18 8	3621	49 59 56	3685	48 42 52	3757
	Fomalhaut	E.	80 54 36	2511	79 13 38	2506	77 32 33	2502	75 51 22	2499
	α Pegasi	E.	97 54 34	2732	96 18 36	2721	94 42 24	2712	93 6 0	2704
	SATURN	E.	113 43 9	2353	111 58 27	2346	110 13 34	2338	108 28 30	2331
18	Spica	W.	64 41 27	2308	66 27 15	2302	68 13 11	2298	69 59 14	2294
	Antares	W.	19 26 35	2546	21 6 44	2502	22 47 54	2465	24 29 56	2435
	Fomalhaut	E.	67 24 40	2494	65 43 19	2496	64 2 0	2499	62 20 46	2504
	α Pegasi	E.	85 1 52	2682	83 24 46	2681	81 47 40	2680	80 10 33	2681
	SATURN	E.	99 40 54	2304	97 55 0	2299	96 8 59	2295	94 22 52	2292

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
11	SUN	W.	128 57 26	3226	130 23 4	3213	131 48 57	3200	133 15 6	3186
	MARS	W.	96 47 38	3099	98 15 48	3086	99 44 15	3072	101 12 59	3059
	VENUS	W.	84 19 23	3167	85 46 12	3153	87 13 18	3138	88 40 42	3124
	Pollux	W.	67 39 37	2882	69 12 18	2869	70 45 16	2857	72 18 30	2844
	JUPITER	W.	53 51 22	2906	55 23 33	2893	56 56 0	2880	58 28 44	2867
	Spica	E.	23 39 12	3084	22 10 43	3104	20 42 38	3131	19 15 6	3166
	Antares	E.	69 4 59	2898	67 32 38	2887	66 0 2	2875	64 27 11	2862
	α Aquilæ	E.	113 23 25	3592	112 6 29	3661	110 49 0	3631	109 30 59	3603
12	MARS	W.	108 40 53	2987	110 11 22	2973	111 42 9	2958	113 13 14	2943
	VENUS	W.	96 2 10	3048	97 31 23	3032	99 0 56	3017	100 30 48	3001
	Pollux	W.	80 9 6	2774	81 44 7	2760	83 19 27	2746	84 55 6	2732
	JUPITER	W.	66 16 39	2799	67 51 8	2785	69 25 55	2771	71 1 0	2757
	Antares	E.	56 39 2	2802	55 4 37	2790	53 29 56	2778	51 55 0	2766
	α Aquilæ	E.	102 53 39	3478	101 32 50	3456	100 11 37	3435	98 50 0	3414
13	VENUS	W.	108 5 3	2923	109 36 53	2907	111 9 3	2891	112 41 33	2876
	Pollux	W.	92 58 1	2661	94 35 33	2647	96 13 24	2633	97 51 34	2619
	JUPITER	W.	79 1 7	2687	80 38 5	2672	82 15 23	2658	83 53 0	2644
	Antares	E.	43 56 31	2711	42 20 6	2701	40 43 28	2692	39 6 38	2684
	α Aquilæ	E.	91 56 32	3328	90 32 53	3313	89 8 57	3300	87 44 45	3288
	14	VENUS	W.	120 28 57	2801	122 3 24	2786	123 38 10	2772	125 13 15	2758
Pollux		W.	106 7 4	2552	107 47 5	2539	109 27 24	2526	111 8 1	2514
JUPITER		W.	92 5 45	2575	93 45 14	2561	95 25 2	2548	97 5 8	2536
Antares		E.	31 0 8	2660	29 22 34	2661	27 45 2	2665	26 7 35	2672
α Aquilæ		E.	80 40 37	3242	79 15 18	3237	77 49 53	3234	76 24 24	3232
Fomalhaut		E.	113 44 56	2757	112 9 32	2738	110 33 43	2720	108 57 30	2703
15		JUPITER	W.	105 29 57	2475	107 11 45	2464	108 53 50	2453	110 36 10	2442
	Spica	W.	30 14 35	2556	31 54 30	2533	33 34 57	2512	35 15 53	2493
	α Aquilæ	E.	69 16 56	3245	67 51 40	3234	66 26 35	3225	65 1 43	3210
	Fomalhaut	E.	100 51 0	2627	99 12 42	2614	97 34 6	2601	95 55 12	2589
	α Pegasi	E.	116 39 47	2947	115 8 28	2922	113 36 37	2898	112 4 15	2875
	16	JUPITER	W.	119 11 30	2393	120 55 15	2384	122 39 12	2376	124 23 21	2368
Spica		W.	43 46 41	2416	45 29 53	2403	47 13 23	2391	48 57 10	2380
α Aquilæ		E.	58 2 35	3395	56 40 13	3430	55 18 30	3469	53 57 31	3514
Fomalhaut		E.	87 36 55	2539	85 56 36	2531	84 16 6	2524	82 35 26	2517
α Pegasi		E.	104 15 45	2783	102 40 55	2769	101 5 45	2755	99 30 18	2743
17		Spica	W.	57 39 48	2335	59 24 57	2327	61 10 17	2320	62 55 47	2314
	α Aquilæ	E.	47 27 4	3837	46 12 40	3927	44 59 48	4030	43 48 39	4146
	Fomalhaut	E.	74 10 7	2496	72 28 48	2494	70 47 26	2493	69 6 3	2493
	α Pegasi	E.	91 29 26	2698	89 52 43	2692	88 15 52	2687	86 38 54	2684
	SATURN	E.	106 43 16	2325	104 57 53	2319	103 12 21	2314	101 26 41	2309
	18	Spica	W.	71 45 23	2290	73 31 38	2287	75 17 57	2284	77 4 21	2281
Antares		W.	26 12 41	2410	27 56 1	2390	29 39 49	2373	31 24 2	2359
Fomalhaut		E.	60 39 39	2510	58 58 39	2517	57 17 49	2505	55 37 10	2535
α Pegasi		E.	78 33 27	2683	76 56 24	2687	75 19 26	2692	73 42 35	2698
SATURN		E.	92 36 40	2289	90 50 24	2286	89 4 3	2283	87 17 39	2281

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
19	Spica W.	78 50 50	2279	80 37 21	2277	82 23 55	2275	84 10 31	2274
	Antares W.	33 8 35	2348	34 53 25	2337	36 38 30	2328	38 23 48	2321
	Fomalhaut E.	53 56 45	2547	52 16 37	2560	50 36 47	2575	48 57 18	2593
	α Pegasi E.	72 5 52	2705	70 29 19	2713	68 52 57	2724	67 16 49	2737
	SATURN E.	85 31 11	2279	83 44 40	2278	81 58 8	2277	80 11 34	2276
	α Arietis E.	114 38 54	2411	112 55 35	2405	111 12 8	2401	109 28 34	2397
20	Spica W.	93 3 42	2275	94 50 19	2276	96 36 54	2277	98 23 27	2279
	Antares W.	47 12 28	2300	48 58 28	2298	50 44 31	2296	52 30 37	2295
	Fomalhaut E.	40 47 17	2729	39 11 15	2769	37 36 6	2815	36 1 58	2868
	α Pegasi E.	59 20 59	2825	57 47 3	2850	56 13 40	2877	54 40 52	2907
	SATURN E.	71 18 36	2277	69 32 2	2278	67 45 30	2278	65 59 0	2281
	α Arietis E.	100 49 35	2385	99 5 39	2385	97 21 43	2385	95 37 47	2385
	SUN E.	123 19 46	2553	121 39 46	2554	119 59 47	2555	118 19 50	2556
21	Spica W.	107 15 22	2293	109 1 32	2296	110 47 37	2300	112 33 37	2304
	Antares W.	61 21 12	2297	63 7 16	2299	64 53 17	2300	66 39 16	2302
	α Pegasi E.	47 7 53	3117	45 40 4	3174	44 13 24	3237	42 47 59	3309
	SATURN E.	57 7 13	2293	55 21 3	2296	53 34 58	2299	51 48 57	2303
	α Arietis E.	86 58 33	2396	85 14 53	2400	83 31 18	2404	81 47 48	2408
	SUN E.	110 0 36	2566	108 20 54	2569	106 41 16	2572	105 1 42	2575
22	Antares W.	75 28 17	2317	77 13 51	2321	78 59 20	2324	80 44 44	2328
	SATURN E.	43 0 20	2324	41 14 56	2329	39 29 39	2335	37 44 30	2340
	α Arietis E.	73 12 8	2437	71 29 26	2445	69 46 55	2453	68 4 35	2461
	SUN E.	96 45 4	2594	95 6 0	2598	93 27 3	2602	91 48 11	2607
23	Antares W.	89 30 10	2351	91 14 55	2356	92 59 33	2362	94 44 3	2368
	α Aquilæ W.	49 42 45	3647	51 0 29	3587	52 19 18	3533	53 39 7	3484
	SATURN E.	29 0 57	2374	27 16 45	2382	25 32 45	2391	23 48 57	2401
	α Arietis E.	59 36 7	2512	57 55 10	2525	56 14 31	2538	54 34 11	2552
	SUN E.	83 35 27	2632	81 57 15	2637	80 19 10	2642	78 41 12	2648
24	Antares W.	103 24 36	2396	105 8 17	2402	106 51 49	2408	108 35 12	2415
	α Aquilæ W.	60 29 59	3308	61 54 1	3283	63 18 33	3261	64 43 31	3242
	α Arietis E.	46 18 0	2645	44 40 6	2669	43 2 43	2695	41 25 55	2723
	SUN E.	70 33 19	2677	68 56 8	2683	67 19 6	2689	65 42 12	2695
25	α Aquilæ W.	71 53 4	3178	73 19 40	3171	74 46 24	3165	76 13 15	3161
	SUN E.	57 39 51	2729	56 3 50	2736	54 27 58	2743	52 52 16	2750
26	α Aquilæ W.	83 28 15	3160	84 55 12	3163	86 22 5	3168	87 48 53	3174
	SATURN W.	12 47 42	2601	14 26 35	2586	16 5 50	2577	17 45 17	2573
	SUN E.	44 56 13	2790	43 21 31	2798	41 47 0	2806	40 12 40	2815
27	α Aquilæ W.	95 0 35	3221	96 26 19	3234	97 51 48	3248	99 17 0	3264
	SATURN W.	26 2 53	2582	27 42 13	2587	29 21 26	2593	31 0 31	2599
	SUN E.	32 23 53	2861	30 50 44	2871	29 17 48	2881	27 45 5	2892
31	SUN W.	15 57 33	3224	17 23 14	3229	18 48 49	3235	20 14 17	3242
	JUPITER E.	43 24 58	2895	41 52 33	2906	40 20 22	2917	38 48 25	2928
	Spica E.	116 58 7	2875	115 25 16	2884	113 52 37	2893	112 20 9	2902

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
19	Spica W.	85 57 9	2274	87 43 47	2274	89 30 25	2273	91 17 4	2274
	Antares W.	40 9 17	2315	41 54 55	2310	43 40 40	2306	45 26 32	2303
	Fomalhaut E.	47 18 14	2614	45 39 38	2638	44 1 34	2664	42 24 5	2694
	α Pegasi E.	65 40 58	2751	64 5 25	2766	62 30 12	2783	60 55 23	2803
	SATURN E.	78 24 58	2276	76 38 23	2275	74 51 47	2275	73 5 11	2276
	α Arietis E.	107 44 55	2394	106 1 11	2391	104 17 22	2388	102 33 30	2386
20	Spica W.	100 9 57	2281	101 56 24	2284	103 42 47	2286	105 29 7	2289
	Antares W.	54 16 44	2295	56 2 51	2294	57 48 59	2295	59 35 6	2296
	Fomalhaut E.	34 28 58	2929	32 57 15	3000	31 27 2	3083	29 58 32	3180
	α Pegasi E.	53 8 42	2940	51 37 14	2978	50 6 34	3019	48 36 45	3065
	SATURN E.	64 12 32	2283	62 26 7	2285	60 39 46	2285	58 53 28	2290
	α Arietis E.	93 53 51	2387	92 9 57	2389	90 26 6	2391	88 42 18	2393
	SUN E.	116 39 54	2558	115 0 1	2559	113 20 10	2561	111 40 22	2563
21	Spica W.	114 19 30	2309	116 5 16	2313	117 50 56	2318	119 36 29	2324
	Antares W.	68 25 12	2305	70 11 4	2308	71 56 53	2311	73 42 37	2314
	α Pegasi E.	41 23 58	3390	40 1 29	3481	38 40 44	3583	37 21 52	3697
	SATURN E.	50 3 2	2307	48 17 13	2311	46 31 29	2315	44 45 51	2320
	α Arietis E.	80 4 25	2413	78 21 9	2418	76 38 0	2424	74 55 0	2430
	SUN E.	103 22 13	2578	101 42 48	2582	100 3 28	2586	98 24 13	2590
22	Antares W.	82 30 2	2332	84 15 14	2337	86 0 19	2342	87 45 18	2346
	SATURN E.	35 59 29	2346	34 14 37	2353	32 29 54	2359	30 45 20	2366
	α Arietis E.	66 22 26	2470	64 40 36	2480	62 58 48	2490	61 17 20	2500
	SUN E.	90 9 25	2612	88 30 45	2617	86 52 13	2621	85 13 47	2626
23	Antares W.	96 28 26	2373	98 12 40	2378	99 56 47	2383	101 40 46	2389
	α Aquilæ W.	54 59 49	3440	56 21 20	3401	57 43 35	3367	59 6 29	3336
	SATURN E.	22 5 24	2413	20 22 8	2427	18 39 11	2443	16 56 37	2462
	α Arietis E.	52 54 10	2568	51 14 31	2585	49 35 15	2603	47 56 24	2623
	SUN E.	77 3 22	2654	75 25 40	2659	73 48 5	2665	72 10 38	2671
24	Antares W.	110 18 26	2422	112 1 29	2429	113 44 23	2436	115 27 7	2443
	α Aquilæ W.	66 8 50	3225	67 34 29	3210	69 0 26	3197	70 26 38	3186
	α Arietis E.	39 49 45	2754	38 14 17	2790	36 39 36	2830	35 5 47	2873
	SUN E.	64 5 26	2702	62 28 49	2709	60 52 21	2716	59 16 2	2722
25	α Aquilæ W.	77 40 12	3158	79 7 12	3157	80 34 13	3157	82 1 15	3158
	SUN E.	51 16 43	2758	49 41 21	2766	48 6 8	2774	46 31 5	2782
26	α Aquilæ W.	89 15 33	3182	90 42 4	3189	92 8 26	3198	93 34 37	3209
	SATURN W.	19 24 49	2572	21 4 23	2573	22 43 57	2574	24 23 27	2577
	SUN E.	38 38 31	2824	37 4 34	2833	35 30 48	2842	33 57 14	2852
27	α Aquilæ W.	100 41 54	3281	102 6 28	3298	103 30 42	3317	104 54 35	3337
	SATURN W.	32 39 27	2606	34 18 14	2613	35 56 51	2621	37 35 18	2628
	SUN E.	26 12 36	2904	24 40 21	2916	23 8 22	2928	21 36 39	2941
31	SUN W.	21 39 37	3249	23 4 49	3257	24 29 52	3265	25 54 45	3273
	JUPITER E.	37 16 41	2939	35 45 11	2950	34 13 55	2960	32 42 52	2970
	Spica E.	110 47 53	2911	109 15 49	2920	107 43 56	2929	106 12 14	2938

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from		Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Added to Apparent Time.				
		h m s	s	° ' "	"	' "	s	m s	s		
Mon.	1	4 35 49.08	10.232	N.22 2 27.5	+ 20.54	15 47.90	68.37	2 26.44	0.375		
Tues.	2	4 39 54.85	10.249	22 10 29.1	19.57	15 47.77	68.42	2 17.24	0.391		
Wed.	3	4 44 1.01	10.264	22 18 7.5	18.60	15 47.64	68.47	2 7.66	0.406		
Thur.	4	4 48 7.51	10.278	22 25 22.5	+ 17.62	15 47.51	68.53	1 57.74	0.420		
Frid.	5	4 52 14.36	10.291	22 32 14.0	16.64	15 47.39	68.58	1 47.48	0.434		
Sat.	6	4 56 21.53	10.303	22 38 41.7	15.66	15 47.28	68.63	1 36.91	0.447		
SUN.	7	5 0 28.99	10.316	22 44 45.5	+ 14.67	15 47.17	68.67	1 26.03	0.459		
Mon.	8	5 4 36.74	10.328	22 50 25.4	13.67	15 47.06	68.71	1 14.88	0.470		
Tues.	9	5 8 44.74	10.338	22 55 41.2	12.66	15 46.96	68.75	1 3.47	0.480		
Wed.	10	5 12 52.97	10.347	23 0 32.8	+ 11.64	15 46.86	68.78	0 51.83	0.489		
Thur.	11	5 17 1.40	10.355	23 5 0.0	10.62	15 46.76	68.81	0 39.98	0.498		
Frid.	12	5 21 10.04	10.363	23 9 2.8	9.61	15 46.67	68.84	0 27.93	0.506		
Sat.	13	5 25 18.87	10.370	23 12 41.2	+ 8.59	15 46.58	68.86	0 15.70	0.513		
SUN.	14	5 29 27.85	10.377	23 15 55.0	7.57	15 46.49	68.88	0 3.30	0.519		
Mon.	15	5 33 36.97	10.382	23 18 44.3	6.54	15 46.41	68.90	0 9.23	0.525		
Tues.	16	5 37 46.23	10.388	23 21 8.9	+ 5.51	15 46.33	68.92	0 21.89	0.530		
Wed.	17	5 41 55.60	10.393	23 23 8.8	4.48	15 46.25	68.93	0 34.66	0.534		
Thur.	18	5 46 5.06	10.396	23 24 44.0	3.45	15 46.18	68.94	0 47.53	0.537		
Frid.	19	5 50 14.57	10.399	23 25 54.5	+ 2.42	15 46.11	68.94	1 0.46	0.539		
Sat.	20	5 54 24.15	10.401	23 26 40.2	1.39	15 46.05	68.94	1 13.44	0.540		
SUN.	21	5 58 33.75	10.401	23 27 1.2	+ 0.36	15 45.99	68.94	1 26.44	0.541		
Mon.	22	6 2 43.35	10.400	23 26 57.4	- 0.67	15 45.93	68.94	1 39.45	0.541		
Tues.	23	6 6 52.93	10.399	23 26 28.8	1.71	15 45.87	68.93	1 52.45	0.540		
Wed.	24	6 11 2.46	10.396	23 25 35.4	2.74	15 45.82	68.92	2 5.38	0.538		
Thur.	25	6 15 11.92	10.392	23 24 17.3	- 3.77	15 45.78	68.91	2 18.24	0.534		
Frid.	26	6 19 21.27	10.387	23 22 34.5	4.80	15 45.74	68.89	2 31.00	0.529		
Sat.	27	6 23 30.50	10.380	23 20 27.0	5.82	15 45.71	68.87	2 43.64	0.523		
SUN.	28	6 27 39.57	10.373	23 17 54.9	- 6.85	15 45.68	68.85	2 56.12	0.516		
Mon.	29	6 31 48.45	10.365	23 14 58.2	7.87	15 45.66	68.82	3 8.41	0.508		
Tues.	30	6 35 57.12	10.356	23 11 37.1	8.88	15 45.65	68.79	3 20.49	0.499		
Wed.	31	6 40 5.57	10.347	N.23 7 51.6	- 9.90	15 45.64	68.76	3 32.35	0.489		

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.19 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing; the sign - indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

AT GREENWICH MEAN NOON.									
Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to		Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Subtracted from Mean Time.			
						m	s		
Mon.	1	h m s 4 35 49.50	s 10.231	° ' " N.22 2 28.4	" + 20.54	m s 2 26.42	s 0.375	h m s 4 38 15.92	
Tues.	2	4 39 55.25	10.247	22 10 29.9	19.57	2 17.23	0.391	4 42 12.48	
Wed.	3	4 44 1.38	10.263	22 18 8.2	18.60	2 7.65	0.406	4 46 9.03	
Thur.	4	4 48 7.86	10.275	22 25 23.1	+ 17.62	1 57.73	0.420	4 50 5.59	
Frid.	5	4 52 14.68	10.291	22 32 14.5	16.64	1 47.47	0.434	4 54 2.15	
Sat.	6	4 56 21.81	10.303	22 38 42.1	15.66	1 36.90	0.447	4 57 58.71	
SUN.	7	5 0 29.24	10.315	22 44 45.9	+ 14.67	1 26.02	0.459	5 1 55.26	
Mon.	8	5 4 36.95	10.327	22 50 25.7	13.67	1 14.87	0.470	5 5 51.82	
Tues.	9	5 8 44.92	10.338	22 55 41.4	12.66	1 3.46	0.480	5 9 48.38	
Wed.	10	5 12 53.12	10.347	23 0 32.9	+ 11.64	0 51.82	0.489	5 13 44.94	
Thur.	11	5 17 1.52	10.355	23 5 0.1	10.62	0 39.97	0.498	5 17 41.49	
Frid.	12	5 21 10.12	10.363	23 9 2.9	9.61	0 27.93	0.506	5 21 38.05	
Sat.	13	5 25 18.91	10.370	23 12 41.2	+ 8.59	0 15.70	0.513	5 25 34.61	
SUN.	14	5 29 27.86	10.376	23 15 55.0	7.57	0 3.30	0.519	5 29 31.16	
Mon.	15	5 33 36.95	10.381	23 18 44.3	6.55	0 9.23	0.525	5 33 27.72	
Tues.	16	5 37 46.17	10.387	23 21 8.9	+ 5.51	0 21.89	0.530	5 37 24.28	
Wed.	17	5 41 55.50	10.391	23 23 8.8	4.48	0 34.66	0.534	5 41 20.84	
Thur.	18	5 46 4.92	10.394	23 24 44.0	3.45	0 47.52	0.537	5 45 17.40	
Frid.	19	5 50 14.40	10.397	23 25 54.5	+ 2.42	1 0.45	0.539	5 49 13.95	
Sat.	20	5 54 23.94	10.399	23 26 40.2	1.39	1 13.43	0.541	5 53 10.51	
SUN.	21	5 58 33.50	10.399	23 27 1.2	+ 0.36	1 26.43	0.541	5 57 7.07	
Mon.	22	6 2 43.06	10.398	23 26 57.4	- 0.67	1 39.43	0.541	6 1 3.63	
Tues.	23	6 6 52.61	10.397	23 26 28.8	1.71	1 52.43	0.540	6 5 0.18	
Wed.	24	6 11 2.10	10.394	23 25 35.5	2.75	2 5.36	0.538	6 8 56.74	
Thur.	25	6 15 11.52	10.390	23 24 17.4	- 3.79	2 18.22	0.534	6 12 53.30	
Frid.	26	6 19 20.84	10.385	23 22 34.7	4.82	2 30.98	0.529	6 16 49.86	
Sat.	27	6 23 30.03	10.378	23 20 27.2	5.84	2 43.61	0.523	6 20 46.42	
SUN.	28	6 27 39.06	10.371	23 17 55.2	- 6.86	2 56.09	0.516	6 24 42.97	
Mon.	29	6 31 47.91	10.363	23 14 58.6	7.88	3 8.38	0.508	6 28 39.53	
Tues.	30	6 35 56.55	10.354	23 11 37.6	8.89	3 20.46	0.499	6 32 36.09	
Wed.	31	6 40 4.96	10.345	N.23 7 52.1	- 9.90	3 32.32	0.489	6 36 32.64	

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing; the sign - indicates that north declinations are decreasing.

Diff for 1 Hour,
+ 9°.8565.
(Table III.)

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing; the sign - indicates that north declinations are decreasing.

Diff for 1 Hour,
+ 9°.8565.
(Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S					Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.				
		λ	λ'						
		° ' "	' "	"	"			h m s	
1	153	70 33 52.4	33 49.4	143.73	+ 0.41	0.006 1880	+ 25.9	19 18 33.76	
2	154	71 31 21.4	31 18.2	143.69	0.53	0.006 2489	24.9	19 14 37.85	
3	155	72 28 49.2	28 45.9	143.64	0.64	0.006 3076	24.0	19 10 41.94	
4	156	73 26 15.9	26 12.4	143.59	+ 0.75	0.006 3642	+ 23.1	19 6 46.02	
5	157	74 23 41.5	23 37.8	143.54	0.85	0.006 4186	22.3	19 2 50.11	
6	158	75 21 5.9	21 2.1	143.49	0.90	0.006 4711	21.5	18 58 54.20	
7	159	76 18 29.3	18 25.3	143.45	+ 0.94	0.006 5216	+ 20.7	18 54 58.29	
8	160	77 15 51.5	15 47.4	143.40	0.95	0.006 5702	19.9	18 51 2.38	
9	161	78 13 12.7	13 8.3	143.36	0.94	0.006 6171	19.2	18 47 6.47	
10	162	79 10 32.8	10 28.3	143.32	+ 0.90	0.006 6624	+ 18.5	18 43 10.56	
11	163	80 7 52.0	7 47.3	143.28	0.83	0.006 7061	17.9	18 39 14.64	
12	164	81 5 10.2	5 5.4	143.24	0.73	0.006 7484	17.3	18 35 18.73	
13	165	82 2 27.7	2 22.7	143.21	+ 0.61	0.006 7892	+ 16.7	18 31 22.82	
14	166	82 59 44.4	59 39.2	143.18	0.47	0.006 8287	16.2	18 27 26.91	
15	167	83 57 0.6	56 55.2	143.16	0.33	0.006 8670	15.7	18 23 31.00	
16	168	84 54 16.2	54 10.6	143.14	+ 0.18	0.006 9039	+ 15.1	18 19 35.09	
17	169	85 51 31.4	51 25.7	143.13	+ 0.05	0.006 9395	14.5	18 15 39.18	
18	170	86 48 46.3	48 40.4	143.12	- 0.08	0.006 9735	13.9	18 11 43.26	
19	171	87 46 0.9	45 54.9	143.11	- 0.17	0.007 0060	+ 13.2	18 7 47.35	
20	172	88 43 15.4	43 9.2	143.10	0.23	0.007 0367	12.4	18 3 51.44	
21	173	89 40 29.8	40 23.4	143.10	0.28	0.007 0655	11.6	17 59 55.53	
22	174	90 37 44.1	37 37.5	143.09	- 0.27	0.007 0923	+ 10.7	17 55 59.62	
23	175	91 34 58.3	34 51.5	143.09	0.25	0.007 1169	9.8	17 52 3.70	
24	176	92 32 12.4	32 5.5	143.09	0.18	0.007 1391	8.8	17 48 7.79	
25	177	93 29 26.5	29 19.4	143.08	- 0.10	0.007 1589	+ 7.7	17 44 11.88	
26	178	94 26 40.5	26 33.2	143.08	+ 0.01	0.007 1763	6.7	17 40 15.97	
27	179	95 23 54.3	23 46.8	143.07	0.13	0.007 1911	5.6	17 36 20.06	
28	180	96 21 8.0	21 0.3	143.07	+ 0.27	0.007 2032	+ 4.6	17 32 24.15	
29	181	97 18 21.5	18 13.7	143.06	0.39	0.007 2128	3.5	17 28 28.23	
30	182	98 15 34.9	15 26.9	143.05	0.52	0.007 2198	2.4	17 24 32.32	
31	183	99 12 48.1	12 39.9	143.04	+ 0.61	0.007 2243	+ 1.3	17 20 36.41	
NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.									Diff. for 1 Hour, - 9 ^s .8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	15 1.3	14 57.9	55 1.8	- 1.08	54 49.4	- 0.98	2 0.3	2.14	2.4
2	14 54.9	14 52.3	54 38.4	0.85	54 29.0	0.71	2 51.1	2.09	3.4
3	14 50.3	14 48.7	54 21.4	0.55	54 15.7	0.38	3 40.3	2.01	4.4
4	14 47.7	14 47.4	54 12.1	- 0.20	54 10.9	- 0.01	4 27.6	1.93	5.4
5	14 47.7	14 48.7	54 12.0	+ 0.19	54 15.6	+ 0.40	5 12.9	1.84	6.4
6	14 50.4	14 52.7	54 21.8	0.62	54 30.5	0.83	5 56.6	1.79	7.4
7	14 55.8	14 59.5	54 41.8	+ 1.04	54 55.5	+ 1.24	6 39.2	1.77	8.4
8	15 3.9	15 8.9	55 11.6	1.43	55 30.0	1.61	7 21.7	1.78	9.4
9	15 14.5	15 20.5	55 50.3	1.77	56 12.4	1.90	8 4.9	1.83	10.4
10	15 26.9	15 33.5	56 35.8	+ 2.00	57 0.3	+ 2.07	8 50.0	1.93	11.4
11	15 40.4	15 47.3	57 25.4	2.10	57 50.6	2.09	9 37.9	2.08	12.4
12	15 54.0	16 0.5	58 15.5	2.03	58 39.3	1.93	10 29.7	2.25	13.4
13	16 6.6	16 12.2	59 1.7	+ 1.78	59 22.0	+ 1.59	11 25.8	2.42	14.4
14	16 17.0	16 21.1	59 39.8	1.36	59 54.7	1.11	12 25.8	2.56	15.4
15	16 24.3	16 26.5	60 6.4	0.83	60 14.6	+ 0.53	13 28.0	2.62	16.4
16	16 27.8	16 28.1	60 19.2	+ 0.24	60 20.3	- 0.05	14 30.8	2.57	17.4
17	16 27.4	16 25.9	60 18.0	- 0.32	60 12.6	0.57	15 31.2	2.45	18.4
18	16 23.7	16 20.8	60 4.3	0.79	59 53.5	0.99	16 28.2	2.30	19.4
19	16 17.3	16 13.3	59 40.7	- 1.14	59 26.1	- 1.27	17 21.4	2.15	20.4
20	16 8.9	16 4.4	59 10.2	1.36	58 53.5	1.42	18 11.7	2.04	21.4
21	15 59.7	15 54.8	58 36.1	1.46	58 18.4	1.48	18 59.9	1.98	22.4
22	15 50.0	15 45.2	58 0.6	- 1.48	57 42.9	- 1.46	19 47.2	1.96	23.4
23	15 40.4	15 35.8	57 25.5	1.44	57 8.4	1.41	20 34.5	1.98	24.4
24	15 31.2	15 26.8	56 51.7	1.37	56 35.5	1.33	21 22.5	2.02	25.4
25	15 22.5	15 18.4	56 19.8	- 1.29	56 4.6	- 1.24	22 11.8	2.08	26.4
26	15 14.4	15 10.6	55 50.0	1.19	55 36.0	1.14	23 2.3	2.12	27.4
27	15 6.9	15 3.5	55 22.6	1.09	55 9.9	1.03	23 53.5	2.13	28.4
28	15 0.2	14 57.2	54 57.9	- 0.96	54 46.8	- 0.88	0	.	29.4
29	14 54.4	14 51.9	54 36.7	0.80	54 27.6	0.70	0 44.4	2.11	0.8
30	14 49.8	14 48.0	54 19.7	0.60	54 13.2	0.48	1 34.3	2.04	1.8
31	14 46.6	14 45.7	54 8.2	- 0.35	54 4.7	- 0.21	2 22.5	1.95	2.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 1.					WEDNESDAY 3.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	6 34 23.58	2.2312	N.23 27 44.6	0.978	0	8 19 18.52	2.1237	N.22 2 10.4	4.390
1	6 36 37.42	2.2301	23 28 39.7	0.859	1	8 21 25.85	2.1207	21 57 44.0	4.491
2	6 38 51.19	2.2289	23 29 27.7	0.740	2	8 23 33.00	2.1175	21 53 11.5	4.591
3	6 41 4.89	2.2277	23 30 8.5	0.621	3	8 25 39.95	2.1143	21 48 33.1	4.690
4	6 43 18.52	2.2265	23 30 42.2	0.502	4	8 27 46.72	2.1112	21 43 48.7	4.788
5	6 45 32.07	2.2252	23 31 8.8	0.383	5	8 29 53.29	2.1080	21 38 58.5	4.886
6	6 47 45.54	2.2238	23 31 28.2	0.264	6	8 31 59.68	2.1048	21 34 2.4	4.984
7	6 49 58.93	2.2224	23 31 40.5	0.147	7	8 34 5.87	2.1016	21 29 0.4	5.081
8	6 52 12.23	2.2208	23 31 45.8	+0.028	8	8 36 11.87	2.0984	21 23 52.7	5.177
9	6 54 25.43	2.2192	23 31 43.9	-0.090	9	8 38 17.68	2.0952	21 18 39.2	5.272
10	6 56 38.54	2.2177	23 31 35.0	0.207	10	8 40 23.29	2.0919	21 13 20.0	5.367
11	6 58 51.56	2.2161	23 31 19.0	0.325	11	8 42 28.71	2.0887	21 7 55.1	5.462
12	7 1 4.47	2.2143	23 30 56.0	0.442	12	8 44 33.93	2.0854	21 2 24.5	5.557
13	7 3 17.28	2.2126	23 30 26.0	0.558	13	8 46 38.96	2.0822	20 56 48.3	5.649
14	7 5 29.98	2.2108	23 29 49.0	0.675	14	8 48 43.79	2.0788	20 51 6.6	5.742
15	7 7 42.58	2.2090	23 29 5.0	0.792	15	8 50 48.42	2.0756	20 45 19.3	5.834
16	7 9 55.06	2.2070	23 28 14.0	0.907	16	8 52 52.86	2.0724	20 39 26.5	5.925
17	7 12 7.42	2.2050	23 27 16.1	1.022	17	8 54 57.11	2.0691	20 33 28.3	6.016
18	7 14 19.66	2.2030	23 26 11.3	1.137	18	8 57 1.15	2.0658	20 27 24.6	6.107
19	7 16 31.78	2.2010	23 24 59.6	1.252	19	8 59 5.00	2.0626	20 21 15.5	6.196
20	7 18 43.78	2.1989	23 23 41.0	1.367	20	9 1 8.66	2.0593	20 15 1.1	6.284
21	7 20 55.65	2.1961	23 22 15.5	1.482	21	9 3 12.12	2.0560	20 8 41.4	6.373
22	7 23 7.38	2.1944	23 20 43.2	1.596	22	9 5 15.38	2.0527	20 2 16.4	6.461
23	7 25 18.98	2.1922	N.23 19 4.0	1.709	23	9 7 18.45	2.0496	N.19 55 46.1	6.547
TUESDAY 2.					THURSDAY 4.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	7 27 30.45	2.1900	N.23 17 18.1	1.822	0	9 9 21.33	2.0463	N.19 49 10.7	6.633
1	7 29 41.78	2.1876	23 15 25.4	1.934	1	9 11 24.01	2.0430	19 42 30.1	6.719
2	7 31 52.96	2.1852	23 13 26.0	2.047	2	9 13 26.49	2.0397	19 35 44.4	6.804
3	7 34 4.00	2.1827	23 11 19.8	2.158	3	9 15 28.78	2.0366	19 28 53.6	6.888
4	7 36 14.89	2.1803	23 9 7.0	2.269	4	9 17 30.88	2.0334	19 21 57.8	6.972
5	7 38 25.64	2.1778	23 6 47.5	2.380	5	9 19 32.79	2.0302	19 14 56.9	7.056
6	7 40 36.23	2.1752	23 4 21.4	2.490	6	9 21 34.50	2.0269	19 7 51.1	7.138
7	7 42 46.66	2.1726	23 1 48.7	2.600	7	9 23 36.02	2.0237	19 0 40.3	7.220
8	7 44 56.94	2.1700	22 59 9.4	2.709	8	9 25 37.35	2.0206	18 53 24.7	7.301
9	7 47 7.06	2.1673	22 56 23.6	2.818	9	9 27 38.49	2.0174	18 46 4.2	7.382
10	7 49 17.02	2.1647	22 53 31.2	2.927	10	9 29 39.44	2.0143	18 38 38.8	7.462
11	7 51 26.82	2.1619	22 50 32.3	3.035	11	9 31 40.20	2.0112	18 31 8.7	7.542
12	7 53 36.45	2.1592	22 47 27.0	3.142	12	9 33 40.78	2.0081	18 23 33.8	7.621
13	7 55 45.92	2.1563	22 44 15.2	3.249	13	9 35 41.17	2.0050	18 15 54.2	7.698
14	7 57 55.21	2.1535	22 40 57.1	3.355	14	9 37 41.38	2.0020	18 8 10.0	7.776
15	8 0 4.34	2.1507	22 37 32.6	3.462	15	9 39 41.41	1.9989	18 0 21.1	7.853
16	8 2 13.29	2.1477	22 34 1.7	3.567	16	9 41 41.25	1.9958	17 52 27.6	7.929
17	8 4 22.07	2.1449	22 30 24.5	3.672	17	9 43 40.91	1.9928	17 44 29.6	8.005
18	8 6 30.68	2.1419	22 26 41.0	3.777	18	9 45 40.39	1.9899	17 36 27.0	8.080
19	8 8 39.10	2.1390	22 22 51.3	3.880	19	9 47 39.70	1.9870	17 28 20.0	8.153
20	8 10 47.35	2.1360	22 18 55.4	3.982	20	9 49 38.83	1.9840	17 20 8.6	8.227
21	8 12 55.42	2.1329	22 14 53.4	4.085	21	9 51 37.78	1.9811	17 11 52.7	8.301
22	8 15 3.30	2.1298	22 10 45.2	4.188	22	9 53 36.56	1.9782	17 3 32.5	8.373
23	8 17 11.00	2.1268	22 6 30.8	4.290	23	9 55 35.16	1.9753	16 55 7.9	8.445
24	8 19 18.52	2.1237	N.22 2 10.4	4.390	24	9 57 33.60	1.9726	N.16 46 39.0	8.517

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 5.					SUNDAY 7.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	9 57 33.60	1.9726	N. 16 46 39.0	8.517	0	11 29 41.62	1.8835	N. 8 47 19.5	11.287
1	9 59 31.87	1.9697	16 38 5.9	8.587	1	11 31 34.61	1.8828	8 36 4.6	11.269
2	10 1 29.97	1.9669	16 29 28.6	8.657	2	11 33 27.56	1.8822	8 24 47.2	11.310
3	10 3 27.90	1.9642	16 20 47.1	8.727	3	11 35 20.47	1.8816	8 13 27.4	11.351
4	10 5 25.68	1.9616	16 12 1.4	8.796	4	11 37 13.35	1.8812	8 2 5.1	11.392
5	10 7 23.29	1.9588	16 3 11.6	8.863	5	11 39 6.21	1.8808	7 50 40.4	11.432
6	10 9 20.74	1.9562	15 54 17.8	8.931	6	11 40 59.05	1.8804	7 39 13.3	11.471
7	10 11 18.03	1.9536	15 45 19.9	8.998	7	11 42 51.86	1.8800	7 27 43.9	11.509
8	10 13 15.17	1.9511	15 36 18.0	9.064	8	11 44 44.65	1.8798	7 16 12.2	11.547
9	10 15 12.16	1.9486	15 27 12.2	9.130	9	11 46 37.44	1.8797	7 4 38.3	11.583
10	10 17 9.00	1.9461	15 18 2.5	9.194	10	11 48 30.21	1.8795	6 53 2.2	11.620
11	10 19 5.69	1.9436	15 8 48.9	9.259	11	11 50 22.98	1.8794	6 41 23.9	11.657
12	10 21 2.23	1.9411	14 59 31.4	9.323	12	11 52 15.74	1.8794	6 29 43.4	11.692
13	10 22 58.62	1.9387	14 50 10.1	9.387	13	11 54 8.51	1.8795	6 18 0.8	11.727
14	10 24 54.88	1.9364	14 40 45.0	9.449	14	11 56 1.28	1.8795	6 6 16.2	11.761
15	10 26 50.99	1.9341	14 31 16.2	9.511	15	11 57 54.05	1.8797	5 54 29.5	11.795
16	10 28 46.97	1.9318	14 21 43.7	9.572	16	11 59 46.84	1.8800	5 42 40.8	11.828
17	10 30 42.81	1.9296	14 12 7.5	9.633	17	12 1 39.65	1.8802	5 30 50.1	11.861
18	10 32 38.52	1.9274	14 2 27.7	9.693	18	12 3 32.47	1.8805	5 18 57.5	11.892
19	10 34 34.10	1.9252	13 52 44.3	9.753	19	12 5 25.31	1.8810	5 7 3.1	11.922
20	10 36 29.55	1.9231	13 42 57.3	9.812	20	12 7 18.19	1.8815	4 55 6.8	11.954
21	10 38 24.87	1.9210	13 33 6.8	9.871	21	12 9 11.09	1.8819	4 43 8.6	11.984
22	10 40 20.07	1.9190	13 23 12.8	9.928	22	12 11 4.02	1.8826	4 31 8.7	12.012
23	10 42 15.15	1.9171	N. 13 13 15.4	9.986	23	12 12 57.00	1.8832	N. 4 19 7.1	12.042
SATURDAY 6.					MONDAY 8.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	10 44 10.12	1.9152	N. 13 3 14.5	10.043	0	12 14 50.01	1.8839	N. 4 7 3.7	12.070
1	10 46 4.97	1.9132	12 53 10.3	10.098	1	12 16 43.07	1.8847	3 54 58.7	12.097
2	10 47 59.71	1.9114	12 43 2.7	10.155	2	12 18 36.18	1.8856	3 42 52.1	12.123
3	10 49 54.34	1.9097	12 32 51.7	10.210	3	12 20 29.34	1.8865	3 30 43.9	12.149
4	10 51 48.87	1.9079	12 22 37.5	10.265	4	12 22 22.56	1.8875	3 18 34.2	12.174
5	10 53 43.29	1.9062	12 12 20.1	10.318	5	12 24 15.84	1.8886	3 6 23.0	12.199
6	10 55 37.61	1.9045	12 1 59.4	10.371	6	12 26 9.19	1.8897	2 54 10.3	12.224
7	10 57 31.83	1.9029	11 51 35.6	10.422	7	12 28 2.60	1.8908	2 41 56.1	12.247
8	10 59 25.96	1.9014	11 41 8.7	10.475	8	12 29 56.08	1.8921	2 29 40.6	12.269
9	11 1 20.00	1.8999	11 30 38.6	10.527	9	12 31 49.65	1.8934	2 17 23.8	12.291
10	11 3 13.95	1.8984	11 20 5.5	10.577	10	12 33 43.29	1.8947	2 5 5.7	12.312
11	11 5 7.81	1.8970	11 9 29.3	10.627	11	12 35 37.01	1.8962	1 52 46.3	12.333
12	11 7 1.59	1.8957	10 58 50.2	10.677	12	12 37 30.83	1.8977	1 40 25.7	12.353
13	11 8 55.29	1.8943	10 48 8.1	10.727	13	12 39 24.74	1.8992	1 28 3.9	12.372
14	11 10 48.91	1.8931	10 37 23.0	10.775	14	12 41 18.74	1.9009	1 15 41.0	12.391
15	11 12 42.46	1.8919	10 26 35.1	10.822	15	12 43 12.85	1.9027	1 3 17.0	12.408
16	11 14 35.94	1.8907	10 15 44.3	10.870	16	12 45 7.06	1.9044	0 50 52.0	12.425
17	11 16 29.35	1.8897	10 4 50.7	10.917	17	12 47 1.38	1.9062	0 38 26.0	12.442
18	11 18 22.70	1.8887	9 53 54.3	10.962	18	12 48 55.81	1.9081	0 25 59.0	12.457
19	11 20 15.99	1.8877	9 42 55.2	11.007	19	12 50 50.35	1.9101	0 13 31.1	12.472
20	11 22 9.22	1.8867	9 31 53.4	11.053	20	12 52 45.02	1.9122	N. 0 1 2.3	12.487
21	11 24 2.39	1.8858	9 20 48.8	11.098	21	12 54 39.81	1.9143	S. 0 11 27.4	12.500
22	11 25 55.52	1.8850	9 9 41.6	11.142	22	12 56 34.73	1.9165	0 23 57.7	12.512
23	11 27 48.59	1.8842	8 58 31.8	11.184	23	12 58 29.79	1.9187	0 36 28.8	12.524
24	11 29 41.62	1.8835	N. 8 47 19.5	11.227	24	13 0 24.98	1.9210	S. 0 49 0.6	12.535

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 9.					THURSDAY 11.				
0	13 0 24.98	1.9210	S. 0 49 0.6	12.535	0	14 36 35.73	2.1122	S. 10 46 35.3	11.976
1	13 2 20.31	1.9834	1 1 33.0	12.545	1	14 38 42.63	2.1177	10 58 32.7	11.937
2	13 4 15.79	1.9859	1 14 6.0	12.555	2	14 40 49.86	2.1234	11 10 27.7	11.897
3	13 6 11.42	1.9284	1 26 39.6	12.564	3	14 42 57.44	2.1291	11 22 20.3	11.856
4	13 8 7.20	1.9310	1 39 13.7	12.572	4	14 45 5.35	2.1348	11 34 10.4	11.813
5	13 10 3.14	1.9337	1 51 48.3	12.579	5	14 47 13.61	2.1406	11 45 57.9	11.769
6	13 11 59.24	1.9363	2 4 23.2	12.585	6	14 49 22.22	2.1464	11 57 42.7	11.723
7	13 13 55.50	1.9392	2 16 58.5	12.591	7	14 51 31.18	2.1523	12 9 24.7	11.677
8	13 15 51.94	1.9421	2 29 34.1	12.594	8	14 53 40.50	2.1583	12 21 3.9	11.630
9	13 17 48.55	1.9449	2 42 9.8	12.598	9	14 55 50.18	2.1642	12 32 40.3	11.581
10	13 19 45.33	1.9479	2 54 45.8	12.602	10	14 58 0.21	2.1702	12 44 13.6	11.529
11	13 21 42.30	1.9511	3 7 22.0	12.603	11	15 0 10.61	2.1763	12 55 43.8	11.477
12	13 23 39.46	1.9542	3 19 58.2	12.604	12	15 2 21.37	2.1824	13 7 10.8	11.423
13	13 25 36.81	1.9574	3 32 34.5	12.605	13	15 4 32.50	2.1887	13 18 34.6	11.368
14	13 27 34.35	1.9607	3 45 10.8	12.604	14	15 6 44.01	2.1950	13 29 55.0	11.312
15	13 29 32.09	1.9640	3 57 47.0	12.602	15	15 8 55.90	2.2012	13 41 12.0	11.254
16	13 31 30.03	1.9674	4 10 23.1	12.600	16	15 11 8.16	2.2074	13 52 25.5	11.195
17	13 33 28.18	1.9709	4 22 59.0	12.596	17	15 13 20.79	2.2138	14 3 35.4	11.134
18	13 35 26.54	1.9745	4 35 34.6	12.592	18	15 15 33.81	2.2202	14 14 41.6	11.072
19	13 37 25.12	1.9782	4 48 10.0	12.587	19	15 17 47.22	2.2267	14 25 44.0	11.007
20	13 39 23.92	1.9818	5 0 45.1	12.581	20	15 20 1.01	2.2332	14 36 42.5	10.942
21	13 41 22.94	1.9855	5 13 19.7	12.573	21	15 22 15.20	2.2397	14 47 37.1	10.876
22	13 43 22.18	1.9893	5 25 53.9	12.565	22	15 24 29.77	2.2461	14 58 27.6	10.807
23	13 45 21.66	1.9933	S. 5 38 27.5	12.556	23	15 26 44.73	2.2527	S. 15 9 14.0	10.738
WEDNESDAY 10.					FRIDAY 12.				
0	13 47 21.38	1.9972	S. 5 51 0.6	12.546	0	15 29 0.09	2.2592	S. 15 19 56.2	10.667
1	13 49 21.33	2.0012	6 3 33.0	12.535	1	15 31 15.84	2.2659	15 30 34.0	10.594
2	13 51 21.53	2.0054	6 16 4.8	12.523	2	15 33 32.00	2.2726	15 41 7.5	10.520
3	13 53 21.98	2.0096	6 28 35.8	12.509	3	15 35 48.55	2.2792	15 51 36.4	10.443
4	13 55 22.68	2.0138	6 41 5.9	12.495	4	15 38 5.51	2.2859	16 2 0.7	10.366
5	13 57 23.64	2.0181	6 53 35.2	12.480	5	15 40 22.86	2.2926	16 12 20.3	10.287
6	13 59 24.85	2.0224	7 6 3.5	12.463	6	15 42 40.62	2.2994	16 22 35.1	10.207
7	14 1 26.33	2.0269	7 18 30.8	12.447	7	15 44 58.79	2.3062	16 32 45.1	10.125
8	14 3 28.08	2.0314	7 30 57.1	12.428	8	15 47 17.36	2.3129	16 42 50.1	10.041
9	14 5 30.10	2.0360	7 43 22.2	12.408	9	15 49 36.34	2.3197	16 52 50.0	9.955
10	14 7 32.40	2.0407	7 55 46.1	12.387	10	15 51 55.73	2.3266	17 2 44.7	9.868
11	14 9 34.98	2.0453	8 8 8.7	12.366	11	15 54 15.53	2.3333	17 12 34.2	9.780
12	14 11 37.84	2.0501	8 20 30.0	12.343	12	15 56 35.73	2.3401	17 22 18.3	9.690
13	14 13 40.99	2.0549	8 32 49.9	12.319	13	15 58 56.34	2.3469	17 31 57.0	9.598
14	14 15 44.43	2.0598	8 45 8.3	12.293	14	16 1 17.36	2.3537	17 41 30.1	9.505
15	14 17 48.17	2.0648	8 57 25.1	12.267	15	16 3 38.78	2.3605	17 50 57.6	9.410
16	14 19 52.21	2.0698	9 9 40.3	12.240	16	16 6 0.62	2.3673	18 0 19.3	9.313
17	14 21 56.55	2.0749	9 21 53.9	12.212	17	16 8 22.86	2.3741	18 9 35.2	9.215
18	14 24 1.20	2.0801	9 34 5.7	12.181	18	16 10 45.51	2.3809	18 18 45.1	9.115
19	14 26 6.16	2.0852	9 46 15.6	12.149	19	16 13 8.57	2.3877	18 27 49.0	9.014
20	14 28 11.43	2.0905	9 58 23.6	12.117	20	16 15 32.04	2.3945	18 36 46.8	8.911
21	14 30 17.02	2.0958	10 10 29.7	12.084	21	16 17 55.91	2.4012	18 45 38.3	8.807
22	14 32 22.93	2.1012	10 22 33.7	12.049	22	16 20 20.19	2.4080	18 54 23.6	8.701
23	14 34 29.16	2.1067	10 34 35.6	12.013	23	16 22 44.87	2.4147	19 3 2.4	8.592
24	14 36 35.73	2.1122	S. 10 46 35.3	11.976	24	16 25 9.95	2.4213	S. 19 11 34.7	8.483

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 13.					MONDAY 15.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	16 25 9.95	2.4213	S. 19 11 34.7	8.483	18 27 58.62	2.6596	S. 23 24 54.1	1.597	
1	16 27 35.43	2.4280	19 20 0.4	8.372	18 30 38.26	2.6617	23 26 24.9	1.430	
2	16 30 1.31	2.4347	19 28 19.3	8.259	18 33 18.02	2.6637	23 27 45.7	1.268	
3	16 32 27.60	2.4414	19 36 31.5	8.146	18 35 57.90	2.6656	23 28 56.3	1.092	
4	16 34 54.28	2.4479	19 44 36.8	8.029	18 38 37.89	2.6672	23 29 56.7	0.922	
5	16 37 21.35	2.4544	19 52 35.0	7.912	5 18 41 17.97	2.6687	23 30 46.9	0.752	
6	16 39 48.81	2.4608	20 0 26.2	7.793	6 18 43 58.13	2.6701	23 31 26.9	0.582	
7	16 42 16.65	2.4673	20 8 10.2	7.672	7 18 46 38.38	2.6714	23 31 56.7	0.412	
8	16 44 44.89	2.4738	20 15 46.9	7.551	8 18 49 18.70	2.6724	23 32 16.3	0.241	
9	16 47 13.51	2.4802	20 23 16.3	7.427	9 18 51 59.07	2.6733	23 32 25.6	-0.069	
10	16 49 42.51	2.4864	20 30 38.2	7.302	10 18 54 39.50	2.6742	23 32 24.6	+0.102	
11	16 52 11.88	2.4927	20 37 52.6	7.176	11 18 57 19.97	2.6747	23 32 13.3	0.273	
12	16 54 41.63	2.4989	20 44 59.3	7.047	12 19 0 0.47	2.6752	23 31 51.8	0.445	
13	16 57 11.75	2.5050	20 51 58.3	6.918	13 19 2 40.99	2.6755	23 31 19.9	0.617	
14	16 59 42.23	2.5111	20 58 49.5	6.787	14 19 5 21.53	2.6757	23 30 37.8	0.788	
15	17 2 13.08	2.5172	21 5 32.7	6.653	15 19 8 2.07	2.6756	23 29 45.3	0.960	
16	17 4 44.29	2.5231	21 12 7.9	6.520	16 19 10 42.60	2.6754	23 28 42.6	1.131	
17	17 7 15.85	2.5289	21 18 35.1	6.385	17 19 13 23.12	2.6751	23 27 29.6	1.302	
18	17 9 47.76	2.5347	21 24 54.1	6.248	18 19 16 3.61	2.6746	23 26 6.3	1.474	
19	17 12 20.01	2.5403	21 31 4.8	6.109	19 19 18 44.07	2.6740	23 24 32.7	1.645	
20	17 14 52.60	2.5460	21 37 7.2	5.970	20 19 21 24.49	2.6732	23 22 48.9	1.815	
21	17 17 25.53	2.5516	21 43 1.2	5.829	21 19 24 4.86	2.6723	23 20 54.9	1.986	
22	17 19 58.79	2.5571	21 48 46.7	5.687	22 19 26 45.17	2.6712	23 18 50.6	2.156	
23	17 22 32.38	2.5624	S. 21 54 23.6	5.543	23 19 29 25.41	2.6700	S. 23 16 36.2	2.325	
SUNDAY 14.					TUESDAY 16.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	17 25 6.28	2.5677	S. 21 59 51.9	5.398	19 32 5.57	2.6686	S. 23 14 11.6	2.494	
1	17 27 40.50	2.5728	22 5 11.4	5.252	1 19 34 45.64	2.6671	23 11 36.9	2.663	
2	17 30 15.02	2.5779	22 10 22.1	5.104	2 19 37 25.62	2.6654	23 8 52.0	2.832	
3	17 32 49.85	2.5830	22 15 23.9	4.956	3 19 40 5.49	2.6636	23 5 57.0	3.000	
4	17 35 24.98	2.5878	22 20 16.8	4.806	4 19 42 45.25	2.6617	23 2 52.0	3.167	
5	17 38 0.39	2.5925	22 25 0.6	4.654	5 19 45 24.89	2.6595	22 59 37.0	3.333	
6	17 40 36.08	2.5972	22 29 35.3	4.502	6 19 48 4.39	2.6572	22 56 12.0	3.500	
7	17 43 12.05	2.6017	22 34 0.9	4.349	7 19 50 43.76	2.6549	22 52 37.0	3.666	
8	17 45 48.29	2.6062	22 38 17.2	4.194	8 19 53 22.98	2.6524	22 48 52.1	3.830	
9	17 48 24.79	2.6105	22 42 24.2	4.038	9 19 56 2.05	2.6498	22 44 57.4	3.994	
10	17 51 1.55	2.6147	22 46 21.8	3.882	10 19 58 40.96	2.6470	22 40 52.8	4.157	
11	17 53 38.56	2.6187	22 50 10.0	3.724	11 20 1 19.69	2.6441	22 36 38.5	4.319	
12	17 56 15.80	2.6227	22 53 48.7	3.566	12 20 3 58.25	2.6411	22 32 14.5	4.481	
13	17 58 53.28	2.6266	22 57 17.9	3.406	13 20 6 36.62	2.6379	22 27 40.8	4.642	
14	18 1 30.99	2.6302	23 0 37.4	3.245	14 20 9 14.80	2.6346	22 22 57.5	4.801	
15	18 4 8.91	2.6337	23 3 47.3	3.084	15 20 11 52.77	2.6312	22 18 4.7	4.960	
16	18 6 47.04	2.6372	23 6 47.5	2.922	16 20 14 30.54	2.6277	22 13 2.3	5.118	
17	18 9 25.37	2.6404	23 9 38.0	2.759	17 20 17 8.09	2.6240	22 7 50.5	5.275	
18	18 12 3.89	2.6436	23 12 18.6	2.595	18 20 19 45.42	2.6203	22 2 29.3	5.431	
19	18 14 42.60	2.6467	23 14 49.4	2.431	19 20 22 22.53	2.6165	21 56 58.8	5.586	
20	18 17 21.49	2.6495	23 17 10.3	2.265	20 20 24 59.40	2.6125	21 51 19.0	5.739	
21	18 20 0.54	2.6522	23 19 21.2	2.099	21 20 27 36.03	2.6085	21 45 30.1	5.892	
22	18 22 39.75	2.6547	23 21 22.2	1.933	22 20 30 12.42	2.6044	21 39 32.0	6.043	
23	18 25 19.11	2.6572	23 23 13.2	1.766	23 20 32 48.55	2.6000	21 33 24.9	6.193	
24	18 27 58.62	2.6596	S. 23 24 54.1	1.597	24 20 35 24.42	2.5956	S. 21 27 8.8	6.342	

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 17.					FRIDAY 19.				
0	20 35 24.42	2.5956	S. 21 27 8.8	6.342	0	22 33 52.23	2.3312	S. 13 57 56.7	11.777
1	20 38 0.02	2.5918	21 20 43.8	6.491	1	22 36 11.94	2.3257	13 46 7.8	11.852
2	20 40 35.36	2.5867	21 14 9.9	6.637	2	22 38 31.32	2.3202	13 34 14.5	11.924
3	20 43 10.42	2.5820	21 7 27.3	6.782	3	22 40 50.36	2.3147	13 22 16.9	11.995
4	20 45 45.20	2.5773	21 0 36.0	6.927	4	22 43 9.08	2.3092	13 10 15.1	12.065
5	20 48 19.70	2.5726	20 53 36.1	7.069	5	22 45 27.47	2.3038	12 58 9.1	12.133
6	20 50 53.91	2.5677	20 46 27.7	7.211	6	22 47 45.54	2.2985	12 45 59.1	12.200
7	20 53 27.82	2.5627	20 39 10.8	7.351	7	22 50 3.29	2.2932	12 33 45.1	12.265
8	20 56 1.44	2.5577	20 31 45.6	7.489	8	22 52 20.72	2.2878	12 21 27.3	12.327
9	20 58 34.75	2.5526	20 24 12.1	7.627	9	22 54 37.83	2.2826	12 9 5.8	12.389
10	21 1 7.75	2.5474	20 16 30.4	7.762	10	22 56 54.63	2.2773	11 56 40.6	12.450
11	21 3 40.44	2.5422	20 8 40.6	7.897	11	22 59 11.11	2.2722	11 44 11.8	12.509
12	21 6 12.82	2.5370	20 0 42.7	8.031	12	23 1 27.29	2.2671	11 31 39.5	12.567
13	21 8 44.88	2.5317	19 52 36.9	8.162	13	23 3 43.16	2.2620	11 19 3.8	12.622
14	21 11 16.62	2.5262	19 44 23.3	8.292	14	23 5 58.73	2.2570	11 6 24.9	12.675
15	21 13 48.03	2.5208	19 36 1.9	8.420	15	23 8 14.00	2.2521	10 53 42.8	12.728
16	21 16 19.12	2.5154	19 27 32.9	8.547	16	23 10 28.98	2.2472	10 40 57.5	12.780
17	21 18 49.88	2.5098	19 18 56.3	8.672	17	23 12 43.67	2.2423	10 28 9.2	12.829
18	21 21 20.30	2.5042	19 10 12.2	8.797	18	23 14 58.06	2.2375	10 15 18.0	12.877
19	21 23 50.39	2.4987	19 1 20.6	8.920	19	23 17 12.17	2.2328	10 2 24.0	12.923
20	21 26 20.14	2.4930	18 52 21.8	9.040	20	23 19 26.00	2.2282	9 49 27.2	12.969
21	21 28 49.55	2.4873	18 43 15.8	9.160	21	23 21 39.55	2.2236	9 36 27.7	13.013
22	21 31 18.62	2.4817	18 34 2.6	9.278	22	23 23 52.83	2.2190	9 23 25.6	13.055
23	21 33 47.35	2.4759	S. 18 24 42.4	9.394	23	23 26 5.83	2.2144	S. 9 10 21.1	13.096
THURSDAY 18.					SATURDAY 20.				
0	21 36 15.73	2.4701	S. 18 15 15.3	9.508	0	23 28 18.56	2.2100	S. 8 57 14.1	13.136
1	21 38 43.76	2.4643	18 5 41.4	9.622	1	23 30 31.03	2.2057	8 44 4.8	13.173
2	21 41 11.45	2.4586	17 56 0.7	9.734	2	23 32 43.24	2.2013	8 30 53.3	13.210
3	21 43 38.79	2.4527	17 46 13.3	9.844	3	23 34 55.19	2.1970	8 17 39.6	13.246
4	21 46 5.78	2.4469	17 36 19.4	9.952	4	23 37 6.88	2.1928	8 4 23.8	13.279
5	21 48 32.42	2.4411	17 26 19.1	10.057	5	23 39 18.33	2.1887	7 51 6.1	13.311
6	21 50 58.71	2.4352	17 16 12.5	10.162	6	23 41 29.53	2.1847	7 37 46.5	13.342
7	21 53 24.65	2.4294	17 5 59.6	10.267	7	23 43 40.49	2.1807	7 24 25.0	13.372
8	21 55 50.24	2.4236	16 55 40.5	10.369	8	23 45 51.21	2.1767	7 11 1.8	13.401
9	21 58 15.48	2.4177	16 45 15.3	10.469	9	23 48 1.70	2.1729	6 57 36.9	13.427
10	22 0 40.36	2.4118	16 34 44.2	10.567	10	23 50 11.96	2.1691	6 44 10.5	13.452
11	22 3 4.90	2.4060	16 24 7.2	10.665	11	23 52 21.99	2.1653	6 30 42.6	13.477
12	22 5 29.08	2.4001	16 13 24.4	10.760	12	23 54 31.80	2.1617	6 17 13.2	13.501
13	22 7 52.91	2.3943	16 2 36.0	10.853	13	23 56 41.39	2.1581	6 3 42.5	13.522
14	22 10 16.40	2.3886	15 51 42.0	10.946	14	23 58 50.77	2.1546	5 50 10.5	13.542
15	22 12 39.54	2.3827	15 40 42.5	11.037	15	0 0 59.94	2.1511	5 36 37.4	13.561
16	22 15 2.32	2.3768	15 29 37.6	11.125	16	0 3 8.90	2.1477	5 23 3.2	13.579
17	22 17 24.76	2.3712	15 18 27.5	11.212	17	0 5 17.66	2.1443	5 9 27.9	13.596
18	22 19 46.86	2.3654	15 7 12.2	11.297	18	0 7 26.22	2.1411	4 55 51.7	13.611
19	22 22 8.61	2.3597	14 55 51.8	11.382	19	0 9 34.59	2.1379	4 42 14.6	13.624
20	22 24 30.02	2.3539	14 44 26.4	11.464	20	0 11 42.77	2.1348	4 28 36.8	13.637
21	22 26 51.08	2.3482	14 32 56.1	11.546	21	0 13 50.77	2.1317	4 14 58.2	13.649
22	22 29 11.80	2.3426	14 21 20.9	11.625	22	0 15 58.58	2.1287	4 1 18.9	13.659
23	22 31 32.19	2.3369	14 9 41.1	11.702	23	0 18 6.22	2.1259	3 47 39.1	13.667
24	22 33 52.23	2.3312	S. 13 57 56.7	11.777	24	0 20 13.69	2.1231	S. 3 33 58.8	13.675

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 21.					TUESDAY 23.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	20 13.69	2.1231	S. 3 33 58.8	13.675	0	2 0 10.44	2.0667	N. 7 9 33.7	12.728
1	0 22 20.99	2.1203	3 20 18.1	13.682	1	2 2 14.45	2.0670	7 22 16.1	12.683
2	0 24 28.12	2.1176	3 6 37.0	13.687	2	2 4 18.48	2.0673	7 34 55.7	12.637
3	0 26 35.10	2.1150	2 52 55.6	13.691	3	2 6 22.53	2.0678	7 47 32.6	12.591
4	0 28 41.92	2.1124	2 39 14.1	13.693	4	2 8 26.62	2.0684	8 0 6.6	12.543
5	0 30 48.59	2.1099	2 25 32.4	13.696	5	2 10 30.74	2.0689	8 12 37.8	12.495
6	0 32 55.11	2.1073	2 11 50.6	13.696	6	2 12 34.89	2.0695	8 25 6.0	12.445
7	0 35 1.49	2.1058	1 58 8.9	13.695	7	2 14 39.08	2.0702	8 37 31.2	12.395
8	0 37 7.73	2.1028	1 44 27.2	13.693	8	2 16 43.31	2.0709	8 49 53.4	12.343
9	0 39 13.83	2.1007	1 30 45.7	13.690	9	2 18 47.59	2.0717	9 2 12.4	12.291
10	0 41 19.81	2.0986	1 17 4.4	13.686	10	2 20 51.92	2.0725	9 14 28.3	12.237
11	0 43 25.66	2.0965	1 3 23.4	13.681	11	2 22 56.29	2.0733	9 26 40.9	12.182
12	0 45 31.39	2.0945	0 49 42.7	13.674	12	2 25 0.72	2.0743	9 38 50.2	12.127
13	0 47 37.00	2.0925	0 36 2.5	13.666	13	2 27 5.21	2.0752	9 50 56.2	12.072
14	0 49 42.49	2.0907	0 22 22.8	13.657	14	2 29 9.75	2.0762	10 2 58.8	12.015
15	0 51 47.88	2.0889	S. 0 8 43.6	13.648	15	2 31 14.35	2.0772	10 14 58.0	11.957
16	0 53 53.16	2.0872	N. 0 4 55.0	13.637	16	2 33 19.02	2.0784	10 26 53.7	11.898
17	0 55 58.34	2.0855	0 18 32.8	13.624	17	2 35 23.76	2.0795	10 38 45.8	11.838
18	0 58 3.42	2.0839	0 32 9.9	13.612	18	2 37 28.56	2.0807	10 50 34.3	11.778
19	1 0 8.41	2.0824	0 45 46.2	13.597	19	2 39 33.44	2.0819	11 2 19.2	11.717
20	1 2 13.31	2.0809	0 59 21.6	13.582	20	2 41 38.39	2.0832	11 14 0.4	11.655
21	1 4 18.12	2.0795	1 12 56.0	13.565	21	2 43 43.42	2.0844	11 25 37.8	11.591
22	1 6 22.85	2.0782	1 26 29.4	13.547	22	2 45 48.52	2.0857	11 37 11.3	11.527
23	1 8 27.51	2.0771	N. 1 40 1.7	13.528	23	2 47 53.71	2.0872	N. 11 48 41.0	11.462
MONDAY 22.					WEDNESDAY 24.				
0	1 10 32.10	2.0759	N. 1 53 32.8	13.508	0	2 49 58.98	2.0886	N. 12 0 6.7	11.396
1	1 12 36.62	2.0747	2 7 2.7	13.488	1	2 52 4.34	2.0900	12 11 28.5	11.339
2	1 14 41.07	2.0737	2 20 31.4	13.467	2	2 54 9.78	2.0914	12 22 46.2	11.281
3	1 16 45.46	2.0727	2 33 58.7	13.443	3	2 56 15.31	2.0930	12 33 59.8	11.192
4	1 18 49.80	2.0719	2 47 24.6	13.420	4	2 58 20.94	2.0946	12 45 9.3	11.123
5	1 20 54.09	2.0710	3 0 49.1	13.395	5	3 0 26.66	2.0962	12 56 14.6	11.053
6	1 22 58.32	2.0702	3 14 12.0	13.368	6	3 2 32.48	2.0977	13 7 15.7	10.982
7	1 25 2.51	2.0695	3 27 33.3	13.342	7	3 4 38.39	2.0993	13 18 12.5	10.910
8	1 27 6.66	2.0688	3 40 53.0	13.314	8	3 6 44.40	2.1010	13 29 4.9	10.837
9	1 29 10.77	2.0682	3 54 11.0	13.285	9	3 8 50.51	2.1027	13 39 53.0	10.764
10	1 31 14.84	2.0677	4 7 27.2	13.254	10	3 10 56.72	2.1044	13 50 36.6	10.689
11	1 33 18.89	2.0672	4 20 41.5	13.223	11	3 13 3.04	2.1062	14 1 15.7	10.614
12	1 35 22.91	2.0668	4 33 54.0	13.192	12	3 15 9.46	2.1079	14 11 50.3	10.538
13	1 37 26.91	2.0665	4 47 4.5	13.158	13	3 17 15.99	2.1097	14 22 20.3	10.461
14	1 39 30.89	2.0662	5 0 13.0	13.124	14	3 19 22.63	2.1115	14 32 45.6	10.383
15	1 41 34.86	2.0660	5 13 19.4	13.088	15	3 21 29.37	2.1133	14 43 6.3	10.305
16	1 43 38.81	2.0658	5 26 23.6	13.052	16	3 23 36.23	2.1152	14 53 22.2	10.225
17	1 45 42.76	2.0657	5 39 25.7	13.016	17	3 25 43.20	2.1171	15 3 33.3	10.144
18	1 47 46.70	2.0657	5 52 25.5	12.977	18	3 27 50.28	2.1190	15 13 39.5	10.063
19	1 49 50.64	2.0657	6 5 23.0	12.938	19	3 29 57.48	2.1209	15 23 40.9	9.982
20	1 51 54.58	2.0657	6 18 18.1	12.898	20	3 32 4.79	2.1227	15 33 37.3	9.899
21	1 53 58.53	2.0658	6 31 10.8	12.857	21	3 34 12.21	2.1247	15 43 28.8	9.816
22	1 56 2.60	2.0660	6 44 1.0	12.816	22	3 36 19.76	2.1267	15 53 15.2	9.732
23	1 58 6.45	2.0663	6 56 48.7	12.772	23	3 38 27.42	2.1287	16 2 56.6	9.647
24	2 0 10.44	2.0667	N. 7 9 33.7	12.728	24	3 40 35.20	2.1307	N. 16 12 32.8	9.561

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 25.					SATURDAY 27.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	3 40 35.20	2.1307	N.16 12 32.8	9.561	0	5 25 3.35	2.2147	N.21 59 26.1	4.665
1	3 42 43.10	2.1327	16 22 3.9	9.474	1	5 27 16.26	2.2157	22 4 2.6	4.551
2	3 44 51.12	2.1347	16 31 29.7	9.387	2	5 29 29.24	2.2167	22 8 32.2	4.436
3	3 46 59.26	2.1367	16 40 50.3	9.299	3	5 31 42.27	2.2177	22 12 54.9	4.321
4	3 49 7.52	2.1387	16 50 5.5	9.209	4	5 33 55.36	2.2186	22 17 10.7	4.206
5	3 51 15.90	2.1407	16 59 15.4	9.120	5	5 36 8.50	2.2194	22 21 19.6	4.090
6	3 53 24.40	2.1427	17 8 19.9	9.030	6	5 38 21.69	2.2202	22 25 21.5	3.973
7	3 55 33.03	2.1447	17 17 19.0	8.939	7	5 40 34.92	2.2209	22 29 16.4	3.857
8	3 57 41.77	2.1467	17 26 12.6	8.847	8	5 42 48.20	2.2217	22 33 4.3	3.741
9	3 59 50.64	2.1488	17 35 0.6	8.754	9	5 45 1.52	2.2223	22 36 45.3	3.624
10	4 1 59.63	2.1508	17 43 43.1	8.661	10	5 47 14.87	2.2228	22 40 19.2	3.507
11	4 4 8.74	2.1528	17 52 19.9	8.567	11	5 49 28.26	2.2234	22 43 46.1	3.389
12	4 6 17.97	2.1548	18 0 51.1	8.472	12	5 51 41.68	2.2238	22 47 5.9	3.272
13	4 8 27.32	2.1569	18 9 16.6	8.377	13	5 53 55.12	2.2242	22 50 18.7	3.154
14	4 10 36.80	2.1589	18 17 36.3	8.281	14	5 56 8.59	2.2247	22 53 24.4	3.037
15	4 12 46.39	2.1608	18 25 50.3	8.184	15	5 58 22.08	2.2250	22 56 23.1	2.919
16	4 14 56.10	2.1628	18 33 58.4	8.087	16	6 0 35.59	2.2252	22 59 14.7	2.801
17	4 17 5.93	2.1648	18 42 0.7	7.988	17	6 2 49.11	2.2254	23 1 59.2	2.682
18	4 19 15.88	2.1668	18 49 57.0	7.889	18	6 5 2.64	2.2255	23 4 36.6	2.564
19	4 21 25.95	2.1687	18 57 47.4	7.791	19	6 7 16.17	2.2256	23 7 6.9	2.445
20	4 23 36.13	2.1707	19 5 31.9	7.691	20	6 9 29.71	2.2257	23 9 30.0	2.327
21	4 25 46.43	2.1727	19 13 10.3	7.590	21	6 11 43.25	2.2256	23 11 46.1	2.208
22	4 27 56.85	2.1746	19 20 42.7	7.489	22	6 13 56.78	2.2255	23 13 55.0	2.089
23	4 30 7.38	2.1764	N.19 28 9.0	7.387	23	6 16 10.31	2.2253	N.23 15 56.8	1.971
FRIDAY 26.					SUNDAY 28.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	4 32 18.02	2.1782	N.19 35 29.1	7.284	0	6 18 23.82	2.2251	N.23 17 51.5	1.852
1	4 34 28.77	2.1802	19 42 43.1	7.182	1	6 20 37.32	2.2248	23 19 39.1	1.733
2	4 36 39.04	2.1820	19 49 50.9	7.077	2	6 22 50.80	2.2244	23 21 19.5	1.614
3	4 38 50.61	2.1838	19 56 52.4	6.972	3	6 25 4.25	2.2240	23 22 52.8	1.496
4	4 41 1.70	2.1857	20 3 47.6	6.868	4	6 27 17.68	2.2236	23 24 19.0	1.377
5	4 43 12.89	2.1873	20 10 36.6	6.763	5	6 29 31.08	2.2231	23 25 38.1	1.258
6	4 45 24.18	2.1891	20 17 19.2	6.657	6	6 31 44.45	2.2225	23 26 50.0	1.139
7	4 47 35.58	2.1908	20 23 55.4	6.550	7	6 33 57.78	2.2218	23 27 54.8	1.021
8	4 49 47.08	2.1925	20 30 25.2	6.442	8	6 36 11.07	2.2212	23 28 52.5	0.903
9	4 51 58.68	2.1942	20 36 48.5	6.335	9	6 38 24.32	2.2204	23 29 43.1	0.784
10	4 54 10.38	2.1958	20 43 5.4	6.227	10	6 40 37.52	2.2196	23 30 26.6	0.666
11	4 56 22.18	2.1974	20 49 15.8	6.118	11	6 42 50.67	2.2187	23 31 3.0	0.547
12	4 58 34.07	2.1989	20 55 19.6	6.009	12	6 45 3.76	2.2177	23 31 32.3	0.429
13	5 0 46.05	2.2005	21 1 16.9	5.900	13	6 47 16.79	2.2167	23 31 54.5	0.311
14	5 2 58.13	2.2020	21 7 7.6	5.790	14	6 49 29.76	2.2157	23 32 9.6	0.193
15	5 5 10.29	2.2034	21 12 51.7	5.679	15	6 51 42.67	2.2146	23 32 17.7	0.076
16	5 7 22.54	2.2044	21 18 29.1	5.568	16	6 53 55.51	2.2131	23 32 18.7	0.042
17	5 9 34.87	2.2062	21 23 59.9	5.457	17	6 56 8.27	2.2121	23 32 12.7	0.159
18	5 11 47.29	2.2076	21 29 23.9	5.344	18	6 58 20.96	2.2107	23 31 59.6	0.276
19	5 13 59.78	2.2088	21 34 41.2	5.232	19	7 0 33.56	2.2093	23 31 39.6	0.392
20	5 16 12.35	2.2102	21 39 51.8	5.120	20	7 2 46.08	2.2080	23 31 12.5	0.510
21	5 18 25.00	2.2114	21 44 55.6	5.007	21	7 4 58.52	2.2066	23 30 38.4	0.626
22	5 20 37.72	2.2125	21 49 52.6	4.893	22	7 7 10.87	2.2050	23 29 57.4	0.742
23	5 22 50.50	2.2136	21 54 42.8	4.779	23	7 9 23.12	2.2034	23 29 9.4	0.855
24	5 25 3.35	2.2147	N.21 59 26.1	4.665	24	7 11 35.28	2.2017	N.23 28 14.4	0.974

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 29.					WEDNESDAY, JULY 1.				
0	h m s	s	N. 23 28 14.4	"	0	h m s	s	N. 20 36 13.8	"
1	7 11 35.28	2.2017	23 27 12.5	0.974	8	54 29.20	2.0723	20 36 13.8	5.994
2	7 13 47.33	2.2000	23 26 3.7	1.089					
3	7 15 59.28	2.1983	23 24 48.0	1.204					
4	7 18 11.13	2.1965	23 23 25.5	1.318					
5	7 20 22.86	2.1946	23 21 56.1	1.432					
6	7 22 34.48	2.1927	23 20 19.8	1.547					
7	7 24 45.98	2.1907	23 18 36.8	1.661					
8	7 26 57.36	2.1887	23 16 47.0	1.773					
9	7 29 8.62	2.1866	23 14 50.4	1.887					
10	7 31 19.75	2.1844	23 12 47.1	1.999					
11	7 33 30.75	2.1823	23 10 37.0	2.112					
12	7 35 41.63	2.1802	23 8 20.3	2.223					
13	7 37 52.37	2.1778	23 5 56.9	2.334					
14	7 40 2.97	2.1755	23 3 26.9	2.445					
15	7 42 13.43	2.1732	23 0 50.2	2.556					
16	7 44 23.75	2.1707	22 58 7.0	2.666					
17	7 46 33.92	2.1682	22 55 17.2	2.775					
18	7 48 43.94	2.1657	22 52 20.9	2.884					
19	7 50 53.81	2.1632	22 49 18.1	2.992					
20	7 53 3.52	2.1606	22 46 8.8	3.101					
21	7 55 13.08	2.1580	22 42 53.0	3.209					
22	7 57 22.48	2.1553	22 39 30.9	3.316					
23	7 59 31.72	2.1526	22 36 2.4	3.422					
	8 1 40.79	2.1498		3.528					
TUESDAY 30.					PHASES OF THE MOON.				
0	8 3 49.70	2.1471	N. 22 32 27.5	3.634					
1	8 5 58.44	2.1443	22 28 46.3	3.739	☾ First Quarter . . .	June 6 16 56.1			
2	8 8 7.02	2.1415	22 24 58.8	3.843	☾ Full Moon	14 1 55.2			
3	8 10 15.42	2.1385	22 21 5.1	3.947	☾ Last Quarter	20 17 26.1			
4	8 12 23.64	2.1356	22 17 5.2	4.051	● New Moon	28 4 31.5			
5	8 14 31.69	2.1327	22 12 59.0	4.154					
6	8 16 39.57	2.1297	22 8 46.7	4.256					
7	8 18 47.26	2.1267	22 4 28.3	4.357	☾ Apogee	June 4 12.5			
8	8 20 54.77	2.1237	22 0 3.8	4.458	☾ Perigee	16 9.9			
9	8 23 2.10	2.1206	21 55 33.3	4.559					
10	8 25 9.24	2.1175	21 50 56.7	4.659					
11	8 27 16.20	2.1144	21 46 14.2	4.758					
12	8 29 22.97	2.1112	21 41 25.7	4.857					
13	8 31 29.55	2.1082	21 36 31.3	4.956					
14	8 33 35.95	2.1050	21 31 31.0	5.053					
15	8 35 42.15	2.1018	21 26 24.9	5.150					
16	8 37 48.16	2.0986	21 21 13.0	5.246					
17	8 39 53.98	2.0953	21 15 55.4	5.342					
18	8 41 59.60	2.0921	21 10 32.0	5.437					
19	8 44 5.03	2.0888	21 5 3.0	5.531					
20	8 46 10.26	2.0855	20 59 28.3	5.625					
21	8 48 15.29	2.0822	20 53 48.0	5.718					
22	8 50 20.12	2.0789	20 48 2.1	5.811					
23	8 52 24.76	2.0757	20 42 10.7	5.902					
24	8 54 29.20	2.0723	N. 20 36 13.8	5.994					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
1	SUN W.	27 19 29	3282	28 44 2	3290	30 8 26	3298	31 32 40	3307
	JUPITER E.	31 12 2	2981	29 41 26	2992	28 11 3	3002	26 40 53	3013
	Spica E.	104 40 44	2947	103 9 25	2957	101 38 18	2965	100 7 22	2973
2	SUN W.	38 31 23	3348	39 54 39	3356	41 17 46	3363	42 40 45	3370
	MARS W.	12 56 18	3231	14 21 51	3237	15 47 16	3243	17 12 34	3250
	Spica E.	92 35 16	3014	91 5 21	3022	89 35 36	3030	88 6 0	3037
3	SUN W.	49 33 42	3402	50 55 56	3407	52 18 4	3412	53 40 7	3417
	MARS W.	24 17 15	3279	25 41 51	3284	27 6 21	3289	28 30 46	3294
	Spica E.	80 40 5	3068	79 11 17	3073	77 42 35	3079	76 14 0	3084
4	SUN W.	60 29 9	3434	61 50 47	3436	63 12 22	3438	64 33 55	3439
	MARS W.	35 31 38	3310	36 55 38	3312	38 19 35	3314	39 43 30	3315
	Pollux W.	22 5 48	3185	23 32 15	3174	24 58 55	3165	26 25 47	3157
	Spica E.	68 52 28	3104	67 24 23	3107	65 56 23	3110	64 28 26	3112
	Antares E.	114 46 52	3104	113 18 47	3105	111 50 44	3106	110 22 42	3106
5	SUN W.	71 21 31	3438	72 43 4	3437	74 4 38	3435	75 26 15	3432
	MARS W.	46 42 55	3314	48 6 50	3313	49 30 46	3311	50 54 45	3309
	Pollux W.	33 42 11	3126	35 9 49	3121	36 37 33	3115	38 5 24	3110
	JUPITER W.	16 17 41	3169	17 44 27	3163	19 11 21	3157	20 38 22	3151
	Spica E.	57 9 12	3119	55 41 25	3119	54 13 39	3119	52 45 53	3119
	Antares E.	103 2 32	3104	101 34 27	3103	100 6 21	3101	98 38 12	3098
6	SUN W.	82 15 15	3412	83 37 18	3406	84 59 27	3400	86 21 44	3393
	MARS W.	57 55 31	3289	59 19 55	3283	60 44 26	3277	62 9 4	3270
	Pollux W.	45 26 19	3080	46 54 52	3073	48 23 34	3066	49 52 25	3059
	JUPITER W.	27 55 11	3122	29 22 54	3116	30 50 44	3109	32 18 43	3102
	Spica E.	45 26 51	3114	43 58 59	3113	42 31 5	3111	41 3 9	3110
	Antares E.	91 16 28	3078	89 47 52	3073	88 19 10	3068	86 50 21	3062
7	SUN W.	93 15 13	3352	94 38 24	3342	96 1 46	3332	97 25 20	3322
	MARS W.	69 14 19	3231	70 39 51	3222	72 5 34	3212	73 31 29	3202
	Pollux W.	57 19 0	3017	58 48 51	3007	60 18 55	2997	61 49 12	2987
	JUPITER W.	39 40 56	3061	41 9 53	3052	42 39 2	3042	44 8 23	3032
	Spica E.	33 43 9	3107	32 15 8	3108	30 47 8	3110	29 19 10	3113
	Antares E.	79 24 15	3026	77 54 34	3017	76 24 43	3008	74 54 40	2999
8	SUN W.	104 26 25	3262	105 51 21	3248	107 16 33	3235	108 42 1	3221
	MARS W.	80 44 20	3143	82 11 37	3130	83 39 10	3117	85 6 59	3103
	Pollux W.	69 23 57	2930	70 55 38	2917	72 27 36	2904	73 59 50	2891
	JUPITER W.	51 38 26	2975	53 9 10	2963	54 40 9	2950	56 11 25	2936
	Antares E.	67 21 24	2947	65 50 5	2936	64 18 32	2924	62 46 44	2912
	α Aquilæ E.	111 52 12	3272	110 35 53	3266	109 19 1	3258	108 1 40	3242
9	SUN W.	115 53 39	3145	117 20 54	3129	118 48 29	3113	120 16 23	3096
	MARS W.	92 30 22	3030	93 59 58	3014	95 29 53	2998	97 0 8	2981
	Pollux W.	81 45 23	2820	83 19 25	2805	84 53 47	2790	86 28 28	2774
	JUPITER W.	63 52 6	2865	65 25 9	2850	66 58 32	2835	68 32 15	2819
	Antares E.	55 3 52	2850	53 30 29	2838	51 56 50	2825	50 22 54	2811
	α Aquilæ E.	101 28 3	3521	100 8 2	3499	98 47 37	3478	97 26 48	3457

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Dist.	XVh	P. L. of Dist.	XVIIIh	P. L. of Dist.	XXIh	P. L. of Dist.
1	SUN	W.	32 56 44	3315	34 20 38	3324	35 44 22	3332	37 7 57	3340
	JUPITER	E.	25 10 57	3084	23 41 14	3035	22 11 45	3047	20 42 30	3059
	Spica	E.	98 36 36	2982	97 6 1	2990	95 35 36	2998	94 5 21	3006
2	SUN	W.	44 3 35	3377	45 26 18	3384	46 48 53	3390	48 11 21	3396
	MARS	W.	18 37 44	3256	20 2 47	3262	21 27 43	3268	22 52 32	3273
	Spica	E.	86 36 33	3044	85 7 15	3050	83 38 4	3056	82 9 1	3062
3	SUN	W.	55 2 4	3421	56 23 56	3425	57 45 44	3428	59 7 28	3431
	MARS	W.	29 55 5	3298	31 19 19	3301	32 43 29	3304	34 7 35	3307
	Spica	E.	74 45 31	3089	73 17 8	3093	71 48 50	3097	70 20 37	3101
4	SUN	W.	65 55 27	3440	67 16 58	3441	68 38 28	3440	69 59 59	3439
	MARS	W.	41 7 24	3316	42 31 16	3316	43 55 9	3316	45 19 2	3316
	Pollux	W.	27 52 48	3149	29 19 58	3143	30 47 15	3137	32 14 40	3132
	Spica	E.	63 0 31	3114	61 32 39	3116	60 4 49	3117	58 37 0	3118
	Antares	E.	108 54 40	3107	107 26 39	3107	105 58 38	3106	104 30 36	3105
5	SUN	W.	76 47 55	3429	78 9 38	3426	79 31 25	3421	80 53 17	3416
	MARS	W.	52 18 46	3306	53 42 50	3302	55 6 59	3298	56 31 13	3294
	Pollux	W.	39 33 21	3105	41 1 25	3099	42 29 36	3093	43 57 54	3087
	JUPITER	W.	22 5 30	3145	23 32 45	3139	25 0 7	3134	26 27 36	3128
	Spica	E.	51 18 6	3119	49 50 19	3118	48 22 31	3117	46 54 42	3115
	Antares	E.	97 9 59	3095	95 41 43	3091	94 13 23	3087	92 44 58	3083
6	SUN	W.	87 44 8	3386	89 6 41	3378	90 29 22	3370	91 52 13	3361
	MARS	W.	63 33 50	3264	64 58 44	3257	66 23 46	3249	67 48 58	3241
	Pollux	W.	51 21 24	3051	52 50 32	3043	54 19 51	3035	55 49 20	3026
	JUPITER	W.	33 46 51	3095	35 15 7	3087	36 43 33	3078	38 12 9	3069
	Spica	E.	39 35 12	3109	38 7 13	3108	36 39 13	3107	35 11 11	3107
	Antares	E.	85 21 25	3055	83 52 21	3048	82 23 8	3041	80 53 46	3034
7	SUN	W.	98 49 6	3311	100 13 5	3300	101 37 17	3288	103 1 43	3275
	MARS	W.	74 57 37	3191	76 23 57	3180	77 50 30	3168	79 17 18	3156
	Pollux	W.	63 19 41	2976	64 50 24	2965	66 21 20	2954	67 52 31	2942
	JUPITER	W.	45 37 56	3021	47 7 43	3010	48 37 43	2999	50 7 57	2987
	Spica	E.	27 51 16	3119	26 23 29	3128	24 55 53	3139	23 28 31	3153
	Antares	E.	73 24 26	2989	71 54 0	2979	70 23 21	2969	68 52 29	2958
8	SUN	W.	110 7 45	3206	111 33 47	3192	113 0 6	3177	114 26 43	3161
	MARS	W.	86 35 4	3089	88 3 27	3075	89 32 7	3060	91 1 5	3045
	Pollux	W.	75 32 21	2877	77 5 9	2863	78 38 15	2849	80 11 40	2835
	JUPITER	W.	57 42 58	2923	59 14 48	2909	60 46 56	2894	62 19 22	2880
	Antares	E.	61 14 41	2900	59 42 23	2888	58 9 49	2875	56 36 59	2862
	α Aquilæ	E.	106 43 51	3616	105 25 34	3591	104 6 50	3567	102 47 39	3544
9	SUN	W.	121 44 38	3079	123 13 13	3062	124 42 9	3044	126 11 27	3027
	MARS	W.	98 30 44	2965	100 1 41	2949	101 32 58	2932	103 4 37	2915
	Pollux	W.	88 3 30	2759	89 38 52	2745	91 14 35	2726	92 50 40	2710
	JUPITER	W.	70 6 18	2803	71 40 42	2787	73 15 26	2771	74 50 32	2755
	Antares	E.	48 48 41	2798	47 14 11	2785	45 39 24	2773	44 4 21	2761
	α Aquilæ	E.	96 5 36	3438	94 44 2	3419	93 22 7	3400	91 59 51	3382

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
10	MARS	W.	104 36 37	2898	106 8 59	2880	107 41 43	2862	109 14 50	2845
	Pollux	W.	94 27 6	2694	96 3 53	2678	97 41 3	2661	99 18 35	2644
	JUPITER	W.	76 25 59	2738	78 1 48	2721	79 38 0	2704	81 14 34	2688
	Antares	E.	42 29 2	2749	40 53 27	2737	39 17 36	2726	37 41 30	2716
	α Aquilæ	E.	90 37 14	3365	89 14 18	3350	87 51 4	3335	86 27 33	3320
11	Pollux	W.	107 31 54	2561	109 11 42	2545	110 51 52	2529	112 32 25	2513
	JUPITER	W.	89 23 6	2602	91 1 58	2586	92 41 12	2569	94 20 50	2552
	Spica	W.	18 43 21	2859	20 16 32	2798	21 51 3	2744	23 26 45	2696
	α Aquilæ	E.	79 26 11	3265	78 1 18	3257	76 36 15	3251	75 11 5	3246
	Fomalhaut	E.	112 25 8	2759	110 49 46	2738	109 13 56	2717	107 37 38	2697
12	JUPITER	W.	102 44 48	2470	104 26 43	2454	106 9 1	2438	107 51 41	2423
	Spica	W.	31 38 48	2528	33 19 23	2502	35 0 34	2478	36 42 19	2455
	α Aquilæ	E.	68 4 27	3247	66 39 13	3253	65 14 6	3262	63 49 9	3274
	Fomalhaut	E.	99 29 32	2602	97 50 39	2584	96 11 22	2567	94 31 42	2551
	α Pegasi	E.	115 22 32	2920	113 50 38	2890	112 18 5	2862	110 44 57	2836
13	Spica	W.	45 18 37	2357	47 3 13	2340	48 48 14	2324	50 33 38	2309
	α Aquilæ	E.	56 49 9	3383	55 26 33	3418	54 4 37	3458	52 43 26	3505
	Fomalhaut	E.	86 8 4	2480	84 26 23	2468	82 44 25	2457	81 2 11	2446
	α Pegasi	E.	102 51 23	2725	101 15 16	2706	99 38 44	2689	98 1 49	2673
	SATURN	E.	121 19 2	2320	119 33 32	2306	117 47 41	2293	116 1 31	2281
14	Spica	W.	59 25 53	2243	61 13 16	2233	63 0 55	2223	64 48 49	2213
	Fomalhaut	E.	72 27 42	2408	70 44 17	2403	69 0 46	2399	67 17 9	2396
	α Pegasi	E.	89 52 24	2611	88 13 44	2602	86 34 52	2595	84 55 50	2589
	SATURN	E.	107 6 17	2224	105 18 25	2214	103 30 19	2205	101 41 59	2197
15	Spica	W.	73 51 36	2175	75 40 41	2169	77 29 55	2164	79 19 17	2160
	Antares	W.	28 15 4	2276	30 1 39	2256	31 48 43	2240	33 36 11	2226
	Fomalhaut	E.	58 38 48	2403	56 55 18	2410	55 11 57	2418	53 28 47	2428
	α Pegasi	E.	76 39 13	2580	74 59 50	2583	73 20 30	2587	71 41 16	2593
	SATURN	E.	92 37 25	2162	90 48 0	2158	88 58 29	2153	87 8 50	2149
	α Arietis	E.	119 29 6	2322	117 43 39	2311	115 57 56	2301	114 11 58	2292
16	Spica	W.	88 27 25	2148	90 17 11	2147	92 6 58	2148	93 56 44	2149
	Antares	W.	42 37 51	2182	44 26 46	2178	46 15 47	2174	48 4 54	2171
	Fomalhaut	E.	44 57 45	2518	43 16 57	2546	41 36 48	2578	39 57 23	2615
	α Pegasi	E.	63 28 0	2651	61 50 14	2669	60 12 53	2690	58 36 0	2714
	SATURN	E.	77 59 25	2138	76 9 24	2137	74 19 22	2138	72 29 20	2139
	α Arietis	E.	105 19 27	2264	103 32 35	2262	101 45 39	2260	99 58 40	2258
17	Spica	W.	103 5 0	2162	104 54 26	2166	106 43 44	2171	108 32 56	2176
	Antares	W.	57 11 6	2170	59 0 19	2172	60 49 28	2175	62 38 33	2178
	α Pegasi	E.	50 40 56	2885	49 8 18	2933	47 36 41	2986	46 6 10	3045
	SATURN	E.	63 19 45	2151	61 30 3	2155	59 40 26	2159	57 50 56	2164
	α Arietis	E.	91 3 47	2266	89 16 58	2270	87 30 14	2275	85 43 37	2280
	Aldebaran	E.	122 13 9	2135	120 23 3	2138	118 33 2	2142	116 43 7	2146
18	Antares	W.	71 42 29	2203	73 30 53	2210	75 19 6	2216	77 7 10	2223
	SATURN	E.	48 45 31	2195	46 56 56	2202	45 8 32	2210	43 20 20	2219

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
10	MARS	W.	110 48 20	2827	112 22 13	2810	113 56 28	2792	115 31 7	2774
	Pollux	W.	100 56 30	2628	102 34 47	2611	104 13 27	2595	105 52 29	2578
	JUPITER	W.	82 51 30	2671	84 28 49	2654	86 6 32	2637	87 44 37	2619
	Antares	E.	36 5 11	2706	34 28 39	2698	32 51 57	2691	31 15 5	2684
	α Aquilæ	E.	85 3 45	3307	83 39 42	3295	82 15 24	3284	80 50 53	3274
11	Pollux	W.	114 13 20	2497	115 54 37	2481	117 36 17	2465	119 18 19	2449
	JUPITER	W.	96 0 52	2535	97 41 17	2519	99 22 4	2502	101 3 15	2486
	Spica	W.	25 3 30	2655	26 41 10	2619	28 19 39	2586	29 58 53	2556
	α Aquilæ	E.	73 45 50	3242	72 20 30	3240	70 55 8	3240	69 29 46	3242
	Fomalhaut	E.	106 0 54	2677	104 23 42	2657	102 46 4	2638	101 8 0	2620
12	JUPITER	W.	109 34 43	2408	111 18 6	2394	113 1 50	2379	114 45 55	2365
	Spica	W.	38 24 36	2433	40 7 24	2412	41 50 41	2393	43 34 26	2375
	α Aquilæ	E.	62 24 27	3289	61 0 4	3307	59 36 1	3328	58 12 21	3353
	Fomalhaut	E.	92 51 39	2536	91 11 15	2521	89 30 31	2507	87 49 27	2493
	α Pegasi	E.	109 11 16	2812	107 37 2	2788	106 2 18	2765	104 27 4	2744
13	Spica	W.	52 19 25	2295	54 5 32	2281	55 52 0	2268	57 38 47	2255
	α Aquilæ	E.	51 23 7	3557	50 3 46	3618	48 45 31	3688	47 28 31	3766
	Fomalhaut	E.	79 19 42	2436	77 36 59	2428	75 54 4	2420	74 10 58	2413
	α Pegasi	E.	96 24 33	2658	94 46 57	2644	93 9 2	2632	91 30 51	2621
	SATURN	E.	114 15 3	2268	112 28 17	2256	110 41 13	2245	108 53 53	2235
14	Spica	W.	66 36 58	2204	68 25 20	2196	70 13 54	2188	72 2 40	2181
	Fomalhaut	E.	65 33 29	2394	63 49 46	2395	62 6 4	2396	60 22 24	2399
	α Pegasi	E.	83 16 40	2584	81 37 23	2581	79 58 2	2579	78 18 38	2578
	SATURN	E.	99 53 27	2189	98 4 43	2181	96 15 47	2174	94 26 41	2168
15	Spica	W.	81 8 45	2156	82 58 19	2153	84 47 58	2151	86 37 40	2149
	Antares	W.	35 24 0	2214	37 12 7	2203	39 0 30	2195	40 49 5	2188
	Fomalhaut	E.	51 45 52	2440	50 3 15	2455	48 20 59	2473	46 39 7	2494
	α Pegasi	E.	70 2 11	2600	68 23 16	2609	66 44 33	2621	65 6 7	2635
	SATURN	E.	85 19 5	2146	83 29 16	2143	81 39 22	2141	79 49 25	2139
	α Arietis	E.	112 25 47	2285	110 39 25	2278	108 52 54	2272	107 6 14	2268
16	Spica	W.	95 46 29	2150	97 36 12	2152	99 25 52	2155	101 15 28	2158
	Antares	W.	49 54 6	2169	51 43 20	2169	53 32 35	2168	55 21 51	2169
	Fomalhaut	E.	38 18 49	2660	36 41 15	2712	35 4 51	2771	33 29 45	2838
	α Pegasi	E.	56 59 40	2741	55 23 55	2771	53 48 49	2805	52 14 28	2843
	SATURN	E.	70 39 20	2140	68 49 22	2141	66 59 26	2143	65 9 33	2147
	α Arietis	E.	98 11 39	2258	96 24 38	2259	94 37 39	2260	92 50 41	2263
17	Spica	W.	110 22 0	2182	112 10 54	2188	113 59 39	2195	115 48 13	2203
	Antares	W.	64 27 34	2182	66 16 29	2187	68 5 16	2192	69 53 56	2197
	α Pegasi	E.	44 36 52	3111	43 8 56	3185	41 42 29	3269	40 17 41	3364
	SATURN	E.	56 1 34	2169	54 12 20	2174	52 23 14	2181	50 34 17	2188
	α Arietis	E.	83 57 8	2286	82 10 48	2293	80 24 38	2300	78 38 38	2308
	Aldebaran	E.	114 53 18	2151	113 3 37	2157	111 14 4	2163	109 24 39	2169
18	Antares	W.	78 55 3	2231	80 42 45	2239	82 30 15	2247	84 17 33	2255
	SATURN	E.	41 32 21	2228	39 44 35	2237	37 57 3	2247	36 9 45	2258

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
18	<i>α</i> Arietis E.	76 52 50	2317	75 7 15	2327	73 21 55	2337	71 36 49	2348
	Aldebaran E.	107 35 24	2175	105 46 19	2182	103 57 24	2189	102 8 39	2196
	SUN E.	126 18 31	2462	124 36 25	2469	122 54 28	2477	121 12 42	2485
19	Antares W.	86 4 39	2264	87 51 31	2274	89 38 9	2283	91 24 34	2293
	<i>α</i> Aquilæ W.	47 18 20	3711	48 34 55	3640	49 52 46	3576	51 11 46	3520
	SATURN E.	34 22 43	2268	32 35 56	2279	30 49 26	2291	29 3 13	2303
	<i>α</i> Arietis E.	62 55 37	2414	61 12 21	2429	59 29 28	2446	57 46 58	2463
	Aldebaran E.	93 7 58	2239	91 20 28	2248	89 33 12	2258	87 46 10	2267
	SUN E.	112 46 54	2530	111 6 23	2540	109 26 6	2550	107 46 2	2561
20	Antares W.	100 12 59	2344	101 57 54	2355	103 42 33	2366	105 26 57	2377
	<i>α</i> Aquilæ W.	58 0 10	3325	59 23 53	3299	60 48 7	3276	62 12 47	3256
	<i>α</i> Arietis E.	49 21 6	2567	47 41 26	2592	46 2 20	2619	44 23 51	2649
	Aldebaran E.	78 54 37	2318	77 9 4	2328	75 23 46	2339	73 38 43	2349
	SUN E.	99 29 22	2615	97 50 47	2626	96 12 27	2637	94 34 22	2648
21	<i>α</i> Aquilæ W.	69 20 51	3196	70 47 5	3190	72 13 26	3185	73 39 53	3183
	Fomalhaut W.	33 40 10	3040	35 9 33	2999	36 39 47	2964	38 10 45	2934
	Aldebaran E.	64 57 21	2404	63 13 52	2415	61 30 38	2426	59 47 40	2437
	SUN E.	86 27 47	2705	84 51 14	2717	83 14 57	2729	81 38 55	2740
22	<i>α</i> Aquilæ W.	80 52 22	3189	82 18 44	3194	83 45 0	3200	85 11 10	3207
	Fomalhaut W.	45 53 7	2848	47 26 33	2839	49 0 11	2832	50 33 58	2827
	Aldebaran E.	51 16 44	2492	49 35 20	2503	47 54 11	2514	46 13 18	2525
	SUN E.	73 42 31	2798	72 8 0	2808	70 33 43	2819	68 59 40	2831
23	<i>α</i> Aquilæ W.	92 19 29	3256	93 44 32	3269	95 9 19	3282	96 33 51	3297
	Fomalhaut W.	58 23 56	2820	59 57 58	2822	61 31 58	2824	63 5 55	2827
	<i>α</i> Pegasi W.	44 44 28	3468	46 5 28	3428	47 27 13	3394	48 49 37	3364
	SATURN W.	21 5 37	2620	22 44 5	2626	24 22 25	2632	26 0 37	2638
	Aldebaran E.	37 52 41	2581	36 13 20	2593	34 34 15	2604	32 55 25	2616
	SUN E.	61 13 2	2886	59 40 25	2897	58 8 2	2907	56 35 52	2917
24	<i>α</i> Aquilæ W.	103 31 57	3385	104 54 31	3406	106 16 42	3428	107 38 27	3450
	Fomalhaut W.	70 54 30	2849	72 27 54	2854	74 1 12	2860	75 34 22	2867
	<i>α</i> Pegasi W.	55 48 57	3262	57 13 54	3248	58 39 6	3237	60 4 31	3228
	SATURN W.	34 9 20	2675	35 46 34	2683	37 23 37	2691	39 0 30	2699
	SUN E.	48 58 21	2969	47 27 30	2979	45 56 52	2989	44 26 26	2999
25	Fomalhaut W.	83 17 59	2903	84 50 14	2911	86 22 19	2919	87 54 14	2927
	<i>α</i> Pegasi W.	67 13 47	3203	68 39 53	3201	70 6 1	3200	71 32 11	3200
	SATURN W.	47 2 6	2741	48 37 52	2749	50 13 27	2757	51 48 51	2766
	SUN E.	36 57 21	3049	35 28 9	3058	33 59 8	3068	32 30 19	3077
26	Fomalhaut W.	95 31 3	2973	97 1 50	2983	98 32 25	2993	100 2 47	3002
	<i>α</i> Pegasi W.	78 42 38	3212	80 8 33	3216	81 34 23	3221	83 0 7	3226
	SATURN W.	59 43 9	2807	61 17 28	2815	62 51 36	2823	64 25 34	2831
	SUN E.	25 9 4	3124	23 41 23	3133	22 13 53	3142	20 46 34	3151
30	SUN W.	20 14 10	3377	21 36 53	3382	22 59 30	3387	24 22 1	3393
	Spica E.	84 15 27	3052	82 46 18	3057	81 17 16	3063	79 48 21	3068

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
18	α Arietis	E.	69 51 58	2359	68 7 24	2372	66 23 9	2385	64 39 13	2399
	Aldebaran	E.	100 20 6	2204	98 31 45	2213	96 43 37	2221	94 55 41	2230
	SUN	E.	119 31 8	2494	117 49 46	2503	116 8 36	2512	114 27 39	2521
19	Antares	W.	93 10 44	2303	94 56 40	2313	96 42 21	2323	98 27 48	2333
	α Aquilæ	W.	52 31 48	3471	53 52 45	3477	55 14 31	3388	56 37 1	3394
	SATURN	E.	27 17 18	2316	25 31 42	2330	23 46 27	2345	22 1 33	2362
	α Arietis	E.	56 4 53	2481	54 23 13	2501	52 42 1	2522	51 1 18	2544
	Aldebaran	E.	85 59 22	2277	84 12 49	2287	82 26 30	2297	80 40 26	2307
	SUN	E.	106 6 13	2571	104 26 38	2582	102 47 18	2593	101 8 12	2604
20	Antares	W.	107 11 5	2389	108 54 56	2400	110 38 31	2411	112 21 50	2422
	α Aquilæ	W.	63 37 50	3239	65 3 13	3225	66 28 52	3213	67 54 46	3204
	α Arietis	E.	42 46 3	2681	41 8 57	2715	39 32 36	2752	37 57 5	2792
	Aldebaran	E.	71 53 55	2360	70 9 23	2371	68 25 7	2382	66 41 6	2393
	SUN	E.	92 56 32	2660	91 18 58	2671	89 41 39	2682	88 4 35	2694
21	α Aquilæ	W.	75 6 23	3182	76 32 54	3183	77 59 25	3184	79 25 55	3186
	Fomalhaut	W.	39 42 21	2909	41 14 28	2889	42 47 1	2873	44 19 55	2859
	Aldebaran	E.	58 4 57	2448	56 22 30	2459	54 40 19	2470	52 58 24	2481
	SUN	E.	80 3 8	2752	78 27 37	2763	76 52 20	2774	75 17 18	2786
22	α Aquilæ	W.	86 37 11	3215	88 3 2	3224	89 28 43	3234	90 54 12	3244
	Fomalhaut	W.	52 7 51	2823	53 41 49	2821	55 15 50	2819	56 49 53	2819
	Aldebaran	E.	44 32 40	2536	42 52 17	2548	41 12 10	2559	39 32 18	2570
	SUN	E.	67 25 52	2842	65 52 19	2852	64 18 59	2863	62 45 53	2875
23	α Aquilæ	W.	97 58 7	3313	99 22 4	3329	100 45 42	3346	102 9 0	3363
	Fomalhaut	W.	64 39 49	2830	66 13 38	2834	67 47 21	2839	69 20 59	2844
	α Pegasi	W.	50 12 35	3337	51 36 3	3313	52 59 59	3294	54 24 18	3277
	SATURN	W.	27 38 40	2644	29 16 35	2652	30 54 20	2659	32 31 55	2667
	Aldebaran	E.	31 16 52	2628	29 38 35	2640	28 0 35	2653	26 22 52	2666
	SUN	E.	55 3 55	2928	53 32 12	2939	52 0 42	2949	50 29 25	2959
24	α Aquilæ	W.	108 59 47	3475	110 20 39	3502	111 41 1	3529	113 0 53	3557
	Fomalhaut	W.	77 7 23	2873	78 40 16	2881	80 12 59	2888	81 45 34	2895
	α Pegasi	W.	61 30 7	3220	62 55 52	3214	64 21 45	3209	65 47 44	3205
	SATURN	W.	40 37 11	2707	42 13 41	2716	43 50 0	2724	45 26 8	2732
	SUN	E.	42 56 12	3009	41 26 11	3019	39 56 22	3029	38 26 45	3039
25	Fomalhaut	W.	89 25 58	2936	90 57 31	2945	92 28 53	2954	94 0 4	2963
	α Pegasi	W.	72 58 21	3201	74 24 29	3203	75 50 35	3205	77 16 38	3208
	SATURN	W.	53 24 4	2774	54 59 6	2782	56 33 58	2790	58 8 39	2798
	SUN	E.	31 1 41	3087	29 33 15	3096	28 5 0	3105	26 36 56	3114
26	Fomalhaut	W.	101 32 57	3013	103 2 54	3023	104 32 38	3034	106 2 8	3046
	α Pegasi	W.	84 25 45	3232	85 51 15	3239	87 16 38	3246	88 41 52	3254
	SATURN	W.	65 59 22	2839	67 32 59	2847	69 6 25	2855	70 39 41	2862
	SUN	E.	19 19 26	3160	17 52 28	3169	16 25 42	3177	14 59 6	3185
30	SUN	W.	25 44 25	3399	27 6 43	3404	28 28 55	3408	29 51 2	3412
	Spica	E.	78 19 33	3073	76 50 50	3077	75 22 12	3082	73 53 41	3088

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.				
Wed.	1	h m s 6 40 5.57	s 10.347	° ' " N.23 7 51.6	" - 9.90	' " 15 45.64	s 68.76	m s 3 32.35	s 0.489	
Thur.	2	6 44 13.74	10.336	23 3 41.8	10.91	15 45.63	68.72	3 43.93	0.477	
Frid.	3	6 48 21.65	10.323	22 59 7.8	11.92	15 45.63	68.68	3 55.24	0.465	
Sat.	4	6 52 29.24	10.309	22 54 9.7	- 12.92	15 45.64	68.64	4 6.24	0.452	
SUN.	5	6 56 36.50	10.295	22 48 47.6	13.91	15 45.65	68.60	4 16.91	0.438	
Mon.	6	7 0 43.41	10.280	22 43 1.7	14.90	15 45.67	68.55	4 27.24	0.423	
Tues.	7	7 4 49.95	10.265	22 36 52.2	- 15.88	15 45.69	68.50	4 37.19	0.407	
Wed.	8	7 8 56.09	10.248	22 30 19.1	16.86	15 45.72	68.45	4 46.74	0.390	
Thur.	9	7 13 1.72	10.230	22 23 22.8	17.83	15 45.75	68.38	4 55.90	0.373	
Frid.	10	7 17 7.13	10.212	22 16 3.5	- 18.79	15 45.78	68.32	5 4.63	0.355	
Sat.	11	7 21 11.99	10.194	22 8 20.7	19.74	15 45.81	68.26	5 12.91	0.336	
SUN.	12	7 25 16.40	10.175	22 0 15.4	20.69	15 45.85	68.20	5 20.74	0.317	
Mon.	13	7 29 20.34	10.155	21 51 47.5	- 21.63	15 45.89	68.13	5 28.12	0.298	
Tues.	14	7 33 23.82	10.135	21 42 57.2	22.56	15 45.94	68.07	5 35.02	0.278	
Wed.	15	7 37 26.82	10.115	21 33 44.5	23.48	15 45.99	68.00	5 41.43	0.258	
Thur.	16	7 41 29.33	10.095	21 24 9.8	- 24.39	15 46.04	67.93	5 47.37	0.237	
Frid.	17	7 45 31.34	10.074	21 14 13.4	25.30	15 46.09	67.86	5 52.81	0.216	
Sat.	18	7 49 32.84	10.052	21 3 55.3	26.19	15 46.15	67.79	5 57.74	0.194	
SUN.	19	7 53 33.83	10.030	20 53 15.9	- 27.08	15 46.21	67.71	6 2.16	0.173	
Mon.	20	7 57 34.30	10.008	20 42 15.2	27.96	15 46.27	67.63	6 6.06	0.151	
Tues.	21	8 1 34.23	9.986	20 30 53.6	28.83	15 46.34	67.55	6 9.43	0.129	
Wed.	22	8 5 33.62	9.964	20 19 11.2	- 29.68	15 46.41	67.47	6 12.26	0.106	
Thur.	23	8 9 32.45	9.941	20 7 8.5	30.54	15 46.48	67.39	6 14.53	0.083	
Frid.	24	8 13 30.71	9.916	19 54 45.5	31.38	15 46.57	67.30	6 16.23	0.059	
Sat.	25	8 17 28.42	9.892	19 42 2.6	- 32.20	15 46.66	67.22	6 17.37	0.035	
SUN.	26	8 21 25.54	9.868	19 29 0.0	33.01	15 46.76	67.14	6 17.93	0.011	
Mon.	27	8 25 22.07	9.843	19 15 38.0	33.82	15 46.87	67.05	6 17.91	0.013	
Tues.	28	8 29 18.00	9.818	19 1 56.8	- 34.61	15 46.98	66.97	6 17.28	0.038	
Wed.	29	8 33 13.33	9.792	18 47 56.7	35.39	15 47.09	66.88	6 16.06	0.063	
Thur.	30	8 37 8.05	9.767	18 33 38.2	36.15	15 47.20	66.80	6 14.23	0.089	
Frid.	31	8 41 2.16	9.741	18 19 1.2	36.91	15 47.32	66.71	6 11.79	0.115	
Sat.	32	8 44 55.65	9.716	N.18 4 6.4	- 37.66	15 47.45	66.63	6 8.73	0.141	

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.19 from the sidereal time.
The sign -- prefixed to the hourly change of declination indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ' "	"	m s	s	h m s
Wed.	1	6 40 4.96	10.345	N.23 7 52.1	- 9.90	3 32.32	0.489	6 36 32.64
Thur.	2	6 44 13.10	10.334	23 3 42.4	10.91	3 43.90	0.477	6 40 29.20
Frid.	3	6 48 20.97	10.321	22 59 8.5	11.92	3 55.21	0.465	6 44 25.76
Sat.	4	6 52 28.53	10.307	22 54 10.5	- 12.92	4 6.21	0.452	6 48 22.32
SUN.	5	6 56 35.76	10.293	22 48 48.5	13.91	4 16.88	0.438	6 52 18.88
Mon.	6	7 0 42.64	10.278	22 43 2.8	14.90	4 27.21	0.423	6 56 15.43
Tues.	7	7 4 49.15	10.263	22 36 53.4	- 15.88	4 37.16	0.407	7 0 11.99
Wed.	8	7 8 55.26	10.247	22 30 20.4	16.86	4 46.72	0.390	7 4 8.55
Thur.	9	7 13 0.97	10.230	22 23 24.2	17.83	4 55.87	0.373	7 8 5.10
Frid.	10	7 17 6.26	10.212	22 16 4.8	- 18.79	5 4.60	0.355	7 12 1.66
Sat.	11	7 21 11.10	10.193	22 8 22.4	19.74	5 12.88	0.336	7 15 58.22
SUN.	12	7 25 15.49	10.174	22 0 17.2	20.69	5 20.71	0.317	7 19 54.78
Mon.	13	7 29 19.42	10.154	21 51 49.4	- 21.63	5 28.09	0.298	7 23 51.33
Tues.	14	7 33 22.88	10.134	21 42 59.2	22.56	5 34.99	0.278	7 27 47.89
Wed.	15	7 37 25.86	10.114	21 33 46.7	23.48	5 41.41	0.258	7 31 44.45
Thur.	16	7 41 28.35	10.094	21 24 12.1	- 24.39	5 47.35	0.237	7 35 41.00
Frid.	17	7 45 30.35	10.073	21 14 15.8	25.30	5 52.79	0.216	7 39 37.56
Sat.	18	7 49 31.84	10.052	21 3 57.8	26.19	5 57.72	0.194	7 43 34.12
SUN.	19	7 53 32.82	10.031	20 53 18.5	- 27.08	6 2.14	0.173	7 47 30.68
Mon.	20	7 57 33.28	10.009	20 42 18.0	27.96	6 6.04	0.151	7 51 27.23
Tues.	21	8 1 33.20	9.986	20 30 56.5	28.83	6 9.41	0.129	7 55 23.79
Wed.	22	8 5 32.59	9.963	20 19 14.3	- 29.68	6 12.25	0.106	7 59 20.34
Thur.	23	8 9 31.42	9.940	20 7 11.7	30.54	6 14.52	0.083	8 3 16.90
Frid.	24	8 13 29.68	9.916	19 54 48.8	31.38	6 16.22	0.059	8 7 13.46
Sat.	25	8 17 27.38	9.893	19 42 6.0	- 32.20	6 17.36	0.035	8 11 10.01
SUN.	26	8 21 24.50	9.869	19 29 3.5	33.01	6 17.93	0.011	8 15 6.57
Mon.	27	8 25 21.04	9.844	19 15 41.5	33.82	6 17.91	0.013	8 19 3.13
Tues.	28	8 29 16.98	9.818	19 2 0.4	- 34.61	6 17.29	0.038	8 22 59.68
Wed.	29	8 33 12.31	9.792	18 48 0.4	35.39	6 16.07	0.063	8 26 56.24
Thur.	30	8 37 7.03	9.767	18 33 41.9	36.15	6 14.24	0.089	8 30 52.79
Frid.	31	8 41 1.15	9.741	18 19 5.0	36.91	6 11.80	0.115	8 34 49.35
Sat.	32	8 44 54.65	9.716	N.18 4 10.2	- 37.66	6 8.74	0.141	8 38 45.91

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

Diff. for 1 Hour.
+9°.8565.
(Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.	
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.				
		λ	λ'						
1	183	99 12 48.1	12 39.9	143.04	+ 0.61	0.007 2243	+ 1.3	h m s 17 20 36.41	
2	184	100 10 1.0	9 52.7	143.04	0.70	0.007 2262	+ 0.3	17 16 40.50	
3	185	101 7 13.8	7 5.2	143.03	0.78	0.007 2257	- 0.7	17 12 44.59	
4	186	102 4 26.3	4 17.6	143.02	+ 0.83	0.007 2228	- 1.7	17 8 48.67	
5	187	103 1 38.7	1 29.8	143.01	0.85	0.007 2177	2.6	17 4 52.76	
6	188	103 58 50.8	58 41.9	143.00	0.84	0.007 2103	3.5	17 0 56.85	
7	189	104 56 2.8	55 53.6	143.00	+ 0.80	0.007 2009	- 4.4	16 57 0.94	
8	190	105 53 14.6	53 5.2	142.99	0.73	0.007 1894	5.2	16 53 5.03	
9	191	106 50 26.3	50 16.7	142.99	0.63	0.007 1762	5.9	16 49 9.12	
10	192	107 47 37.8	47 28.1	142.98	+ 0.53	0.007 1611	- 6.6	16 45 13.21	
11	193	108 44 49.5	44 39.6	142.98	0.40	0.007 1445	7.2	16 41 17.30	
12	194	109 42 1.2	41 51.1	142.99	0.25	0.007 1264	7.8	16 37 21.39	
13	195	110 39 13.0	39 2.8	143.00	+ 0.11	0.007 1069	- 8.4	16 33 25.47	
14	196	111 36 25.2	36 14.8	143.01	- 0.02	0.007 0860	9.0	16 29 29.56	
15	197	112 33 37.8	33 27.2	143.03	0.14	0.007 0638	9.5	16 25 33.65	
16	198	113 30 50.8	30 40.1	143.05	- 0.26	0.007 0402	- 10.1	16 21 37.74	
17	199	114 28 4.5	27 53.6	143.08	0.33	0.007 0151	10.8	16 17 41.83	
18	200	115 25 18.9	25 7.8	143.11	0.37	0.006 9885	11.5	16 13 45.92	
19	201	116 22 34.0	22 22.8	143.15	- 0.38	0.006 9601	- 12.2	16 9 50.01	
20	202	117 19 49.9	19 38.6	143.18	0.36	0.006 9299	13.0	16 5 54.10	
21	203	118 17 6.7	16 55.2	143.22	0.30	0.006 8978	13.8	16 1 58.18	
22	204	119 14 24.3	14 12.7	143.25	- 0.22	0.006 8635	- 14.7	15 58 2.27	
23	205	120 11 42.8	11 31.0	143.29	- 0.11	0.006 8270	15.7	15 54 6.36	
24	206	121 9 2.1	8 50.1	143.33	+ 0.01	0.006 7882	16.6	15 50 10.45	
25	207	122 6 22.3	6 10.1	143.36	+ 0.13	0.006 7471	- 17.6	15 46 14.54	
26	208	123 3 43.3	3 31.0	143.40	0.25	0.006 7036	18.7	15 42 18.63	
27	209	124 1 5.1	0 52.7	143.43	0.37	0.006 6576	19.7	15 38 22.72	
28	210	124 58 27.7	58 15.1	143.46	+ 0.48	0.006 6092	- 20.7	15 34 26.81	
29	211	125 55 51.1	55 38.3	143.49	0.59	0.006 5584	21.7	15 30 30.90	
30	212	126 53 15.2	53 2.3	143.52	0.67	0.006 5052	22.7	15 26 34.99	
31	213	127 50 40.1	50 27.0	143.55	0.73	0.006 4497	23.7	15 22 39.08	
32	214	128 48 5.7	47 52.5	143.58	+ 0.76	0.006 3919	- 24.6	15 18 43.17	

NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.

Diff. for 1 Hour,
—9'.8296.
(Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S									
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.	
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.	
	' " "	' " "	' " "	"	' " "	"	h m	m	d	
1	14 46.6	14 45.7	54 8.2	- 0.35	54 4.7	- 0.21	2 22.5	1.96	2.8	
2	14 45.3	14 45.3	54 3.1	- 0.06	54 3.3	+ 0.11	3 8.5	1.87	3.8	
3	14 45.9	14 47.2	54 5.6	+ 0.28	54 10.1	+ 0.47	3 52.6	1.80	4.8	
4	14 49.0	14 51.5	54 16.9	+ 0.66	54 26.1	+ 0.86	4 35.2	1.75	5.8	
5	14 54.7	14 58.5	54 37.6	1.06	54 51.6	1.26	5 17.0	1.74	6.8	
6	15 3.0	15 8.1	55 8.0	1.46	55 26.7	1.65	5 58.9	1.77	7.8	
7	15 13.8	15 20.0	55 47.7	+ 1.81	56 10.7	+ 1.95	6 42.1	1.83	8.8	
8	15 26.8	15 34.0	56 35.6	2.13	57 1.9	2.24	7 27.5	1.95	9.8	
9	15 41.4	15 49.1	57 29.3	2.31	57 57.4	2.34	8 16.2	2.12	10.8	
10	15 56.8	16 4.4	58 25.6	+ 2.33	58 53.4	+ 2.26	9 9.3	2.31	11.8	
11	16 11.6	16 18.4	59 20.0	2.14	59 44.8	1.97	10 7.1	2.50	12.8	
12	16 24.5	16 29.7	60 7.2	1.73	60 26.4	1.46	11 8.8	2.63	13.8	
13	16 34.0	16 37.1	60 42.1	+ 1.13	60 53.7	+ 0.78	12 12.6	2.67	14.8	
14	16 39.1	16 39.8	61 0.8	+ 0.40	61 3.4	+ 0.03	13 15.9	2.59	15.8	
15	16 39.3	16 37.5	61 1.4	- 0.35	60 55.1	- 0.70	14 16.5	2.45	16.8	
16	16 34.7	16 30.9	60 44.7	- 1.02	60 30.6	- 1.30	15 13.2	2.29	17.8	
17	16 26.3	16 20.9	60 13.5	1.53	59 53.9	1.72	16 6.3	2.14	18.8	
18	16 15.0	16 8.7	59 32.3	1.86	59 9.3	1.95	16 56.5	2.04	19.8	
19	16 2.2	15 55.7	58 45.6	- 1.99	58 21.6	- 2.00	17 44.9	1.99	20.8	
20	15 49.2	15 42.8	57 57.6	1.97	57 34.2	1.92	18 32.6	1.99	21.8	
21	15 36.6	15 30.7	57 11.5	1.85	56 49.8	1.76	19 20.5	2.01	22.8	
22	15 25.1	15 19.8	56 29.3	- 1.66	56 10.0	- 1.56	20 9.2	2.05	23.8	
23	15 14.9	15 10.4	55 52.0	1.44	55 35.4	1.33	20 58.9	2.09	24.8	
24	15 6.2	15 2.5	55 20.1	1.22	55 6.2	1.11	21 49.4	2.11	25.8	
25	14 59.0	14 55.9	54 53.6	- 1.00	54 42.2	- 0.89	22 40.0	2.10	26.8	
26	14 53.2	14 50.8	54 32.1	0.79	54 23.3	0.68	23 30.1	2.06	27.8	
27	14 48.7	14 46.9	54 15.6	0.58	54 9.3	0.48	0	.	28.8	
28	14 45.5	14 44.5	54 4.1	- 0.37	54 0.3	- 0.26	0 18.7	1.99	0.2	
29	14 43.8	14 43.5	53 57.8	- 0.15	53 56.7	- 0.03	1 5.4	1.90	1.2	
30	14 43.6	14 44.1	53 57.0	+ 0.10	53 59.0	+ 0.23	1 50.1	1.82	2.2	
31	14 45.1	14 46.6	54 2.6	+ 0.38	54 8.0	+ 0.53	2 33.0	1.76	3.2	
32	14 48.6	14 51.1	54 15.3	+ 0.69	54 24.5	+ 0.85	3 14.8	1.72	4.2	

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 1.					FRIDAY 3.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	8 54 29.20	2.0723	N. 20 36 13.8	5.994	0	10 30 12.50	1.9225	N. 14 16 14.8	9.580
1	8 56 33.44	2.0690	20 30 11.4	6.084	1	10 32 7.77	1.9199	14 6 38.2	9.638
2	8 58 37.48	2.0657	20 24 3.7	6.173	2	10 34 2.89	1.9174	13 56 58.2	9.696
3	9 0 41.32	2.0622	20 17 50.6	6.263	3	10 35 57.86	1.9150	13 47 14.7	9.753
4	9 2 44.95	2.0589	20 11 32.1	6.352	4	10 37 52.69	1.9126	13 37 27.8	9.809
5	9 4 48.39	2.0556	20 5 8.4	6.439	5	10 39 47.37	1.9102	13 27 37.6	9.865
6	9 6 51.62	2.0522	19 58 39.4	6.527	6	10 41 41.91	1.9078	13 17 44.0	9.921
7	9 8 54.66	2.0489	19 52 5.2	6.613	7	10 43 36.31	1.9056	13 7 47.1	9.976
8	9 10 57.49	2.0454	19 45 25.8	6.700	8	10 45 30.58	1.9033	12 57 46.9	10.029
9	9 13 0.11	2.0421	19 38 41.2	6.785	9	10 47 24.71	1.9011	12 47 43.6	10.082
10	9 15 2.54	2.0388	19 31 51.6	6.868	10	10 49 18.71	1.8989	12 37 37.0	10.135
11	9 17 4.77	2.0354	19 24 57.0	6.952	11	10 51 12.58	1.8968	12 27 27.4	10.187
12	9 19 6.79	2.0321	19 17 57.3	7.036	12	10 53 6.33	1.8947	12 17 14.6	10.238
13	9 21 8.62	2.0287	19 10 52.7	7.118	13	10 54 59.95	1.8927	12 6 58.8	10.289
14	9 23 10.24	2.0254	19 3 43.1	7.201	14	10 56 53.45	1.8907	11 56 39.9	10.340
15	9 25 11.67	2.0221	18 56 28.6	7.282	15	10 58 46.83	1.8887	11 46 18.0	10.389
16	9 27 12.89	2.0187	18 49 9.3	7.362	16	11 0 40.10	1.8869	11 35 53.2	10.437
17	9 29 13.92	2.0155	18 41 45.2	7.442	17	11 2 33.26	1.8851	11 25 25.5	10.486
18	9 31 14.75	2.0122	18 34 16.3	7.521	18	11 4 26.31	1.8832	11 14 54.9	10.533
19	9 33 15.38	2.0088	18 26 42.7	7.599	19	11 6 19.25	1.8815	11 4 21.5	10.581
20	9 35 15.81	2.0056	18 19 4.4	7.677	20	11 8 12.09	1.8797	10 53 45.2	10.627
21	9 37 16.05	2.0023	18 11 21.5	7.754	21	11 10 4.82	1.8781	10 43 6.2	10.672
22	9 39 16.09	1.9990	18 3 33.9	7.831	22	11 11 57.46	1.8766	10 32 24.5	10.717
23	9 41 15.93	1.9957	N. 17 55 41.8	7.906	23	11 13 50.01	1.8750	N. 10 21 40.1	10.762
THURSDAY 2.					SATURDAY 4.				
0	9 43 15.58	1.9926	N. 17 47 45.2	7.981	0	11 15 42.46	1.8734	N. 10 10 53.0	10.807
1	9 45 15.04	1.9893	17 39 44.1	8.056	1	11 17 34.82	1.8720	10 0 3.3	10.850
2	9 47 14.30	1.9862	17 31 38.5	8.129	2	11 19 27.10	1.8706	9 49 11.0	10.892
3	9 49 13.38	1.9831	17 23 28.6	8.202	3	11 21 19.29	1.8692	9 38 16.2	10.935
4	9 51 12.27	1.9798	17 15 14.3	8.275	4	11 23 11.41	1.8680	9 27 18.8	10.977
5	9 53 10.95	1.9767	17 6 55.6	8.347	5	11 25 3.45	1.8667	9 16 19.0	11.018
6	9 55 9.47	1.9737	16 58 32.7	8.417	6	11 26 55.42	1.8656	9 5 16.7	11.058
7	9 57 7.80	1.9706	16 50 5.6	8.487	7	11 28 47.32	1.8644	8 54 12.0	11.097
8	9 59 5.94	1.9675	16 41 34.2	8.557	8	11 30 39.15	1.8632	8 43 5.0	11.136
9	10 1 3.90	1.9645	16 32 58.7	8.626	9	11 32 30.91	1.8622	8 31 55.7	11.175
10	10 3 1.68	1.9615	16 24 19.1	8.694	10	11 34 22.62	1.8613	8 20 44.0	11.213
11	10 4 59.28	1.9585	16 15 35.4	8.762	11	11 36 14.27	1.8604	8 9 30.1	11.250
12	10 6 56.70	1.9555	16 6 47.7	8.828	12	11 38 5.87	1.8596	7 58 14.0	11.287
13	10 8 53.94	1.9526	15 57 56.0	8.895	13	11 39 57.42	1.8587	7 46 55.7	11.322
14	10 10 51.01	1.9497	15 49 0.3	8.961	14	11 41 48.92	1.8579	7 35 35.3	11.358
15	10 12 47.91	1.9468	15 40 0.7	9.025	15	11 43 40.37	1.8572	7 24 12.7	11.393
16	10 14 44.63	1.9440	15 30 57.3	9.089	16	11 45 31.79	1.8567	7 12 48.1	11.428
17	10 16 41.19	1.9412	15 21 50.0	9.153	17	11 47 23.17	1.8560	7 1 21.4	11.462
18	10 18 37.58	1.9384	15 12 38.9	9.217	18	11 49 14.51	1.8555	6 49 52.7	11.494
19	10 20 33.80	1.9357	15 3 24.0	9.278	19	11 51 5.83	1.8552	6 38 22.1	11.527
20	10 22 29.86	1.9330	14 54 5.5	9.340	20	11 52 57.13	1.8547	6 26 49.5	11.559
21	10 24 25.76	1.9302	14 44 43.2	9.402	21	11 54 48.40	1.8543	6 15 15.0	11.590
22	10 26 21.49	1.9276	14 35 17.3	9.462	22	11 56 39.65	1.8540	6 3 38.7	11.620
23	10 28 17.07	1.9251	14 25 47.8	9.521	23	11 58 30.88	1.8538	5 52 0.6	11.651
24	10 30 12.50	1.9225	N. 14 16 14.8	9.580	24	12 0 22.11	1.8537	N. 5 40 20.6	11.681

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 5.					TUESDAY 7.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	12 0 22.11	1.8537	N. 5 40 20.6	11.681	0	13 30 23.59	1.9234	S. 4 2 25.3	12.343
1	12 2 13.33	1.8536	5 28 38.9	11.709	1	13 32 19.09	1.9266	4 14 45.8	12.339
2	12 4 4.54	1.8536	5 16 55.5	11.737	2	13 34 14.78	1.9298	4 27 6.0	12.335
3	12 5 55.76	1.8537	5 5 10.4	11.766	3	13 36 10.67	1.9332	4 39 26.0	12.331
4	12 7 46.98	1.8537	4 53 23.6	11.793	4	13 38 6.76	1.9366	4 51 45.7	12.324
5	12 9 38.20	1.8538	4 41 35.2	11.819	5	13 40 3.06	1.9400	5 4 4.9	12.317
6	12 11 29.44	1.8541	4 29 45.3	11.845	6	13 41 59.56	1.9435	5 16 23.7	12.309
7	12 13 20.69	1.8543	4 17 53.8	11.871	7	13 43 56.28	1.9471	5 28 42.0	12.301
8	12 15 11.96	1.8547	4 6 0.8	11.896	8	13 45 53.21	1.9508	5 40 59.8	12.291
9	12 17 3.25	1.8550	3 54 6.3	11.919	9	13 47 50.37	1.9546	5 53 16.9	12.280
10	12 18 54.56	1.8555	3 42 10.5	11.942	10	13 49 47.76	1.9583	6 5 33.4	12.269
11	12 20 45.91	1.8561	3 30 13.2	11.966	11	13 51 45.37	1.9622	6 17 49.2	12.257
12	12 22 37.29	1.8567	3 18 14.6	11.988	12	13 53 43.22	1.9662	6 30 4.3	12.244
13	12 24 28.71	1.8573	3 6 14.7	12.009	13	13 55 41.31	1.9702	6 42 18.5	12.230
14	12 26 20.17	1.8580	2 54 13.5	12.030	14	13 57 39.65	1.9743	6 54 31.9	12.215
15	12 28 11.67	1.8588	2 42 11.1	12.051	15	13 59 38.23	1.9785	7 6 44.3	12.199
16	12 30 3.23	1.8597	2 30 7.4	12.071	16	14 1 37.07	1.9827	7 18 55.8	12.182
17	12 31 54.84	1.8606	2 18 2.6	12.089	17	14 3 36.16	1.9871	7 31 6.2	12.165
18	12 33 46.50	1.8616	2 5 56.7	12.107	18	14 5 35.52	1.9915	7 43 15.6	12.147
19	12 35 38.23	1.8627	1 53 49.7	12.126	19	14 7 35.14	1.9959	7 55 23.8	12.127
20	12 37 30.02	1.8638	1 41 41.6	12.143	20	14 9 35.03	2.0004	8 7 30.8	12.106
21	12 39 21.88	1.8650	1 29 32.5	12.160	21	14 11 35.19	2.0050	8 19 36.5	12.084
22	12 41 13.82	1.8662	1 17 22.4	12.176	22	14 13 35.63	2.0097	8 31 40.9	12.062
23	12 43 5.83	1.8676	N. 1 5 11.4	12.190	23	14 15 36.36	2.0145	S. 8 43 43.9	12.037
MONDAY 6.					WEDNESDAY 8.				
0	12 44 '57.93	1.8690	N. 0 52 59.6	12.204	0	14 17 37.37	2.0193	S. 8 55 45.4	12.012
1	12 46 50.11	1.8704	0 40 46.9	12.218	1	14 19 38.68	2.0242	9 7 45.4	11.987
2	12 48 42.38	1.8720	0 28 33.4	12.232	2	14 21 40.28	2.0292	9 19 43.9	11.961
3	12 50 34.75	1.8736	0 16 19.1	12.245	3	14 23 42.18	2.0342	9 31 40.7	11.932
4	12 52 27.21	1.8752	N. 0 4 4.0	12.257	4	14 25 44.39	2.0393	9 43 35.8	11.903
5	12 54 19.78	1.8770	S. 0 8 11.7	12.268	5	14 27 46.90	2.0444	9 55 29.1	11.873
6	12 56 12.45	1.8788	0 20 28.1	12.278	6	14 29 49.72	2.0497	10 7 20.6	11.842
7	12 58 5.24	1.8807	0 32 45.1	12.287	7	14 31 52.87	2.0551	10 19 10.2	11.810
8	12 59 58.14	1.8827	0 45 2.6	12.297	8	14 33 56.33	2.0603	10 30 57.8	11.777
9	13 1 51.16	1.8847	0 57 20.7	12.305	9	14 36 0.11	2.0658	10 42 43.4	11.742
10	13 3 44.30	1.8867	1 9 39.2	12.312	10	14 38 4.23	2.0714	10 54 26.9	11.707
11	13 5 37.57	1.8889	1 21 58.2	12.320	11	14 40 8.68	2.0769	11 6 8.2	11.669
12	13 7 30.97	1.8912	1 34 17.6	12.326	12	14 42 13.46	2.0826	11 17 47.2	11.631
13	13 9 24.51	1.8935	1 46 37.3	12.332	13	14 44 18.59	2.0883	11 29 23.9	11.592
14	13 11 18.19	1.8958	1 58 57.4	12.337	14	14 46 24.06	2.0940	11 40 58.3	11.552
15	13 13 12.01	1.8982	2 11 17.7	12.341	15	14 48 29.87	2.0998	11 52 30.2	11.510
16	13 15 5.98	1.9007	2 23 38.3	12.344	16	14 50 36.04	2.1058	12 3 59.5	11.467
17	13 17 0.10	1.9033	2 35 59.0	12.347	17	14 52 42.57	2.1117	12 15 26.3	11.423
18	13 18 54.38	1.9060	2 48 19.9	12.348	18	14 54 49.45	2.1177	12 26 50.3	11.378
19	13 20 48.82	1.9087	3 0 40.8	12.349	19	14 56 56.70	2.1238	12 38 11.6	11.332
20	13 22 43.43	1.9115	3 13 1.8	12.350	20	14 59 4.31	2.1300	12 49 30.1	11.284
21	13 24 38.20	1.9143	3 25 22.8	12.352	21	15 1 12.30	2.1362	13 0 45.7	11.234
22	13 26 33.15	1.9173	3 37 43.7	12.348	22	15 3 20.66	2.1425	13 11 58.2	11.183
23	13 28 28.28	1.9203	3 50 4.6	12.347	23	15 5 29.40	2.1487	13 23 7.7	11.132
24	13 30 23.59	1.9234	S. 4 2 25.3	12.343	24	15 7 38.51	2.1551	S. 13 34 14.1	11.079

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 9.					SATURDAY 11.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	15 7 38.51	2.1551	S. 13 34 14.1	11.079	0	16 59 8.49	2.4958	S. 20 57 11.9	6.780
1	15 9 48.01	2.1616	13 45 17.2	11.025	1	17 1 38.45	2.5027	21 3 54.9	6.652
2	15 11 57.90	2.1681	13 56 17.1	10.969	2	17 4 8.82	2.5097	21 10 30.1	6.521
3	15 14 8.18	2.1746	14 7 13.5	10.912	3	17 6 39.61	2.5165	21 16 57.4	6.389
4	15 16 18.85	2.1811	14 18 6.5	10.853	4	17 9 10.80	2.5232	21 23 16.8	6.257
5	15 18 29.91	2.1877	14 28 55.9	10.793	5	17 11 42.39	2.5298	21 29 28.2	6.122
6	15 20 41.38	2.1943	14 39 41.7	10.732	6	17 14 14.38	2.5365	21 35 31.5	5.986
7	15 22 53.25	2.2012	14 50 23.8	10.670	7	17 16 46.77	2.5431	21 41 26.5	5.848
8	15 25 5.53	2.2080	15 1 2.1	10.606	8	17 19 19.55	2.5495	21 47 13.3	5.709
9	15 27 18.21	2.2148	15 11 36.5	10.540	9	17 21 52.71	2.5559	21 52 51.6	5.568
10	15 29 31.31	2.2217	15 22 6.9	10.473	10	17 24 26.62	2.5622	21 58 21.5	5.427
11	15 31 44.82	2.2286	15 32 33.3	10.405	11	17 27 0.18	2.5685	22 3 42.8	5.283
12	15 33 58.74	2.2355	15 42 55.5	10.335	12	17 29 34.48	2.5747	22 8 55.5	5.138
13	15 36 13.08	2.2425	15 53 13.5	10.263	13	17 32 9.14	2.5807	22 13 59.4	4.992
14	15 38 27.84	2.2495	16 3 27.1	10.190	14	17 34 44.17	2.5867	22 18 54.5	4.844
15	15 40 43.02	2.2566	16 13 36.3	10.117	15	17 37 19.55	2.5926	22 23 40.7	4.695
16	15 42 58.63	2.2637	16 23 41.1	10.041	16	17 39 55.28	2.5983	22 28 17.9	4.545
17	15 45 14.67	2.2708	16 33 41.2	9.962	17	17 42 31.35	2.6040	22 32 46.1	4.393
18	15 47 31.13	2.2780	16 43 36.6	9.884	18	17 45 7.76	2.6096	22 37 5.1	4.239
19	15 49 48.03	2.2852	16 53 27.3	9.804	19	17 47 44.50	2.6151	22 41 14.8	4.085
20	15 52 5.36	2.2924	17 3 13.1	9.722	20	17 50 21.57	2.6204	22 45 15.3	3.930
21	15 54 23.12	2.2997	17 12 54.0	9.639	21	17 52 58.95	2.6257	22 49 6.4	3.772
22	15 56 41.32	2.3069	17 22 29.8	9.553	22	17 55 36.65	2.6308	22 52 48.0	3.615
23	15 58 59.95	2.3142	S. 17 32 0.4	9.467	23	17 58 14.65	2.6357	S. 22 56 20.2	3.456
FRIDAY 10.					SUNDAY 12.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	16 1 19.02	2.3215	S. 17 41 25.8	9.379	0	18 0 52.94	2.6406	S. 22 59 42.7	3.295
1	16 3 38.53	2.3287	17 50 45.9	9.289	1	18 3 31.52	2.6454	23 2 55.6	3.133
2	16 5 58.47	2.3361	18 0 0.5	9.197	2	18 6 10.39	2.6501	23 5 58.7	2.971
3	16 8 18.86	2.3435	18 9 9.6	9.104	3	18 8 49.53	2.6545	23 8 52.1	2.808
4	16 10 39.69	2.3508	18 18 13.0	9.009	4	18 11 28.93	2.6588	23 11 35.7	2.643
5	16 13 0.96	2.3582	18 27 10.7	8.914	5	18 14 8.59	2.6631	23 14 9.3	2.477
6	16 15 22.67	2.3655	18 36 2.7	8.817	6	18 16 48.50	2.6672	23 16 33.0	2.311
7	16 17 44.82	2.3729	18 44 48.7	8.717	7	18 19 28.65	2.6711	23 18 46.6	2.143
8	16 20 7.42	2.3803	18 53 28.7	8.615	8	18 22 9.03	2.6749	23 20 50.2	1.975
9	16 22 30.46	2.3877	19 2 2.5	8.512	9	18 24 49.64	2.6786	23 22 43.6	1.806
10	16 24 53.94	2.3950	19 10 30.2	8.409	10	18 27 30.46	2.6821	23 24 26.9	1.637
11	16 27 17.86	2.4024	19 18 51.6	8.303	11	18 30 11.49	2.6854	23 26 0.0	1.466
12	16 29 42.23	2.4097	19 27 6.6	8.196	12	18 32 52.71	2.6886	23 27 22.8	1.294
13	16 32 7.03	2.4170	19 35 15.1	8.087	13	18 35 34.12	2.6917	23 28 35.3	1.122
14	16 34 32.27	2.4243	19 43 17.0	7.976	14	18 38 15.71	2.6946	23 29 37.4	0.949
15	16 36 57.95	2.4316	19 51 12.2	7.863	15	18 40 57.47	2.6973	23 30 29.2	0.776
16	16 39 24.06	2.4388	19 59 0.6	7.749	16	18 43 39.39	2.6999	23 31 10.5	0.602
17	16 41 50.61	2.4462	20 6 42.1	7.634	17	18 46 21.46	2.7022	23 31 41.4	0.427
18	16 44 17.60	2.4533	20 14 16.7	7.517	18	18 49 3.66	2.7045	23 32 1.8	0.252
19	16 46 45.01	2.4605	20 21 44.1	7.397	19	18 51 46.00	2.7067	23 32 11.6	-0.077
20	16 49 12.86	2.4677	20 29 4.4	7.277	20	18 54 28.46	2.7086	23 32 11.0	+0.094
21	16 51 41.13	2.4747	20 36 17.4	7.156	21	18 57 11.03	2.7103	23 31 59.8	0.275
22	16 54 9.83	2.4818	20 43 23.1	7.032	22	18 59 53.70	2.7120	23 31 38.0	0.152
23	16 56 38.95	2.4888	20 50 21.3	6.907	23	19 2 36.47	2.7134	23 31 5.6	0.028
24	16 59 8.49	2.4958	S. 20 57 11.9	6.780	24	19 5 19.31	2.7146	S. 23 30 22.6	0.805

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 13.					WEDNESDAY 15.				
0	19 5 19.31	2.7146	S. 23 30 22.6	0.805	0	21 14 3.48	2.5963	S. 19 34 20.1	8.703
1	19 8 2.22	2.7157	23 29 29.0	0.982	1	21 16 39.10	2.5910	19 25 33.8	8.840
2	19 10 45.19	2.7167	23 28 24.7	1.160	2	21 19 14.40	2.5856	19 16 39.3	8.975
3	19 13 28.22	2.7174	23 27 9.8	1.337	3	21 21 49.37	2.5802	19 7 36.8	9.107
4	19 16 11.28	2.7179	23 25 44.3	1.514	4	21 24 24.02	2.5747	18 58 26.4	9.238
5	19 18 54.37	2.7183	23 24 8.1	1.692	5	21 26 58.33	2.5690	18 49 8.2	9.368
6	19 21 37.48	2.7187	23 22 21.3	1.869	6	21 29 32.30	2.5634	18 39 42.2	9.497
7	19 24 20.61	2.7187	23 20 23.8	2.047	7	21 32 5.94	2.5577	18 30 8.5	9.624
8	19 27 3.73	2.7187	23 18 15.7	2.223	8	21 34 39.23	2.5520	18 20 27.3	9.748
9	19 29 46.85	2.7185	23 15 57.0	2.400	9	21 37 12.18	2.5462	18 10 38.7	9.871
10	19 32 29.95	2.7181	23 13 27.7	2.577	10	21 39 44.78	2.5404	18 0 42.8	9.992
11	19 35 13.02	2.7175	23 10 47.8	2.753	11	21 42 17.03	2.5345	17 50 39.6	10.112
12	19 37 56.05	2.7167	23 7 57.3	2.929	12	21 44 48.92	2.5286	17 40 29.3	10.230
13	19 40 39.03	2.7158	23 4 56.3	3.105	13	21 47 20.46	2.5227	17 30 12.0	10.345
14	19 43 21.95	2.7147	23 1 44.7	3.281	14	21 49 51.64	2.5167	17 19 47.9	10.458
15	19 46 4.80	2.7135	22 58 22.6	3.455	15	21 52 22.46	2.5107	17 9 17.0	10.571
16	19 48 47.57	2.7121	22 54 50.1	3.629	16	21 54 52.92	2.5047	16 58 39.4	10.681
17	19 51 30.25	2.7106	22 51 7.1	3.803	17	21 57 23.02	2.4987	16 47 55.3	10.789
18	19 54 12.84	2.7089	22 47 13.7	3.976	18	21 59 52.76	2.4927	16 37 4.7	10.897
19	19 56 55.32	2.7070	22 43 10.0	4.148	19	22 2 22.14	2.4866	16 26 7.7	11.002
20	19 59 37.68	2.7050	22 38 55.9	4.321	20	22 4 51.15	2.4805	16 15 4.5	11.104
21	20 2 19.92	2.7029	22 34 31.5	4.492	21	22 7 19.80	2.4744	16 3 55.2	11.205
22	20 5 2.03	2.7006	22 29 56.9	4.662	22	22 9 48.08	2.4683	15 52 39.9	11.304
23	20 7 43.99	2.6981	S. 22 25 12.1	4.832	23	22 12 15.99	2.4622	S. 15 41 18.7	11.402
TUESDAY 14.					THURSDAY 16.				
0	20 10 25.80	2.6955	S. 22 20 17.1	5.001	0	22 14 43.54	2.4561	S. 15 29 51.7	11.497
1	20 13 7.45	2.6927	22 15 12.0	5.168	1	22 17 10.72	2.4500	15 18 19.0	11.591
2	20 15 48.93	2.6898	22 9 56.9	5.335	2	22 19 37.54	2.4439	15 6 40.8	11.682
3	20 18 30.23	2.6867	22 4 31.8	5.502	3	22 22 3.99	2.4378	14 54 57.1	11.772
4	20 21 11.34	2.6836	21 58 56.7	5.667	4	22 24 30.08	2.4318	14 43 8.1	11.860
5	20 23 52.26	2.6803	21 53 11.8	5.830	5	22 26 55.81	2.4257	14 31 13.9	11.947
6	20 26 32.98	2.6769	21 47 17.1	5.993	6	22 29 21.17	2.4196	14 19 14.5	12.031
7	20 29 13.49	2.6733	21 41 12.6	6.155	7	22 31 46.16	2.4136	14 7 10.2	12.113
8	20 31 53.78	2.6697	21 34 58.5	6.315	8	22 34 10.80	2.4077	13 55 0.9	12.194
9	20 34 33.85	2.6659	21 28 34.8	6.475	9	22 36 35.08	2.4016	13 42 46.9	12.272
10	20 37 13.09	2.6620	21 22 1.5	6.633	10	22 38 58.99	2.3956	13 30 28.2	12.350
11	20 39 53.29	2.6579	21 15 18.8	6.790	11	22 41 22.55	2.3897	13 18 4.9	12.425
12	20 42 32.64	2.6537	21 8 26.7	6.946	12	22 43 45.75	2.3837	13 5 37.2	12.497
13	20 45 11.74	2.6495	21 1 25.3	7.100	13	22 46 8.60	2.3778	12 53 5.2	12.569
14	20 47 50.58	2.6452	20 54 14.7	7.253	14	22 48 31.09	2.3719	12 40 28.9	12.639
15	20 50 29.16	2.6407	20 46 54.9	7.405	15	22 50 53.23	2.3661	12 27 48.5	12.707
16	20 53 7.46	2.6361	20 39 26.1	7.554	16	22 53 15.02	2.3603	12 15 4.1	12.773
17	20 55 45.49	2.6315	20 31 48.4	7.703	17	22 55 36.47	2.3546	12 2 15.8	12.837
18	20 58 23.24	2.6267	20 24 1.7	7.852	18	22 57 57.57	2.3488	11 49 23.7	12.898
19	21 1 0.70	2.6218	20 16 6.2	7.997	19	23 0 18.33	2.3432	11 36 28.0	12.959
20	21 3 37.86	2.6169	20 8 2.1	8.141	20	23 2 38.75	2.3375	11 23 28.6	13.019
21	21 6 14.73	2.6119	19 59 49.3	8.284	21	23 4 58.83	2.3318	11 10 25.7	13.076
22	21 8 51.29	2.6067	19 51 28.0	8.426	22	23 7 18.57	2.3262	10 57 19.5	13.131
23	21 11 27.54	2.6016	19 42 58.2	8.566	23	23 9 37.98	2.3208	10 44 10.0	13.184
24	21 14 3.48	2.5963	S. 19 34 20.1	8.703	24	23 11 57.07	2.3154	S. 10 30 57.4	13.236

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 17.					SUNDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	N. ° ' "	"
0	23 11 57.07	2.3154	S. 10 30 57.4	13.236	0	0 57 54.86	2.1253	0 33 29.9	13.890
1	23 14 15.83	2.3099	10 17 41.7	13.286	1	1 0 2.31	2.1231	0 47 22.7	13.870
2	23 16 34.26	2.3045	10 4 23.1	13.333	2	1 2 9.63	2.1209	1 1 14.3	13.850
3	23 18 52.37	2.2992	9 51 1.7	13.380	3	1 4 16.82	2.1187	1 15 4.7	13.828
4	23 21 10.17	2.2940	9 37 37.5	13.426	4	1 6 23.88	2.1167	1 28 53.7	13.805
5	23 23 27.65	2.2888	9 24 10.6	13.469	5	1 8 30.82	2.1147	1 42 41.3	13.781
6	23 25 44.82	2.2837	9 10 41.2	13.510	6	1 10 37.64	2.1127	1 56 27.4	13.755
7	23 28 1.69	2.2786	8 57 9.4	13.550	7	1 12 44.34	2.1108	2 10 11.9	13.728
8	23 30 18.25	2.2735	8 43 35.2	13.588	8	1 14 50.94	2.1092	2 23 54.8	13.701
9	23 32 34.51	2.2685	8 29 58.8	13.625	9	1 16 57.44	2.1074	2 37 36.0	13.672
10	23 34 50.47	2.2635	8 16 20.2	13.660	10	1 19 3.83	2.1057	2 51 15.5	13.642
11	23 37 6.13	2.2587	8 2 39.6	13.692	11	1 21 10.13	2.1042	3 4 53.1	13.612
12	23 39 21.51	2.2539	7 48 57.1	13.724	12	1 23 16.33	2.1027	3 18 28.9	13.580
13	23 41 36.60	2.2492	7 35 12.7	13.754	13	1 25 22.45	2.1012	3 32 2.7	13.547
14	23 43 51.41	2.2444	7 21 26.6	13.782	14	1 27 28.48	2.0998	3 45 34.5	13.513
15	23 46 5.93	2.2397	7 7 38.8	13.810	15	1 29 34.43	2.0985	3 59 4.3	13.479
16	23 48 20.18	2.2352	6 53 49.4	13.835	16	1 31 40.30	2.0972	4 12 32.0	13.442
17	23 50 34.16	2.2307	6 39 58.6	13.858	17	1 33 46.10	2.0961	4 25 57.4	13.405
18	23 52 47.87	2.2263	6 26 6.4	13.881	18	1 35 51.83	2.0950	4 39 20.6	13.367
19	23 55 1.32	2.2219	6 12 12.9	13.902	19	1 37 57.50	2.0939	4 52 41.5	13.328
20	23 57 14.50	2.2176	5 58 18.2	13.921	20	1 40 3.10	2.0929	5 6 0.0	13.287
21	23 59 27.43	2.2134	5 44 22.4	13.938	21	1 42 8.65	2.0920	5 19 16.0	13.247
22	0 1 40.11	2.2092	5 30 25.6	13.954	22	1 44 14.14	2.0911	5 32 29.6	13.205
23	0 3 52.54	2.2051	S. 5 16 27.9	13.969	23	1 46 19.58	2.0903	N. 5 45 40.6	13.162
SATURDAY 18.					MONDAY 20.				
0	0 6 4.72	2.2011	S. 5 2 29.3	13.982	0	1 48 24.98	2.0897	N. 5 58 49.0	13.117
1	0 8 16.67	2.1972	4 48 30.0	13.994	1	1 50 30.34	2.0889	6 11 54.7	13.072
2	0 10 28.38	2.1932	4 34 30.0	14.004	2	1 52 35.65	2.0882	6 24 57.7	13.027
3	0 12 39.86	2.1894	4 20 29.5	14.013	3	1 54 40.93	2.0878	6 37 57.9	12.980
4	0 14 51.11	2.1857	4 6 28.5	14.021	4	1 56 46.19	2.0873	6 50 55.3	12.932
5	0 17 2.14	2.1820	3 52 27.0	14.027	5	1 58 51.41	2.0868	7 3 49.8	12.883
6	0 19 12.95	2.1783	3 38 25.3	14.031	6	2 0 56.61	2.0865	7 16 41.3	12.833
7	0 21 23.54	2.1747	3 24 23.3	14.035	7	2 3 1.79	2.0862	7 29 29.8	12.782
8	0 23 33.92	2.1713	3 10 21.1	14.037	8	2 5 6.95	2.0858	7 42 15.2	12.731
9	0 25 44.10	2.1680	2 56 18.9	14.037	9	2 7 12.09	2.0856	7 54 57.5	12.679
10	0 27 54.08	2.1647	2 42 16.6	14.037	10	2 9 17.22	2.0855	8 7 36.7	12.626
11	0 30 3.86	2.1613	2 28 14.5	14.034	11	2 11 22.35	2.0855	8 20 12.6	12.571
12	0 32 13.44	2.1581	2 14 12.5	14.031	12	2 13 27.48	2.0854	8 32 45.2	12.516
13	0 34 22.83	2.1550	2 0 10.8	14.026	13	2 15 32.60	2.0854	8 45 14.5	12.460
14	0 36 32.04	2.1520	1 46 9.4	14.020	14	2 17 37.73	2.0855	8 57 40.4	12.402
15	0 38 41.07	2.1490	1 32 8.4	14.012	15	2 19 42.86	2.0856	9 10 2.8	12.345
16	0 40 49.92	2.1460	1 18 7.9	14.004	16	2 21 48.00	2.0858	9 22 21.8	12.287
17	0 42 58.59	2.1432	1 4 7.9	13.994	17	2 23 53.16	2.0861	9 34 37.2	12.227
18	0 45 7.10	2.1405	0 50 8.6	13.982	18	2 25 58.33	2.0863	9 46 49.0	12.167
19	0 47 15.45	2.1377	0 36 10.0	13.970	19	2 28 3.52	2.0867	9 58 57.2	12.106
20	0 49 23.63	2.1351	0 22 12.2	13.957	20	2 30 8.73	2.0870	10 11 1.7	12.043
21	0 51 31.66	2.1326	S. 0 8 15.2	13.942	21	2 32 13.96	2.0875	10 23 2.4	11.980
22	0 53 39.54	2.1301	N. 0 5 40.8	13.926	22	2 34 19.23	2.0880	10 34 59.3	11.917
23	0 55 47.27	2.1277	0 19 35.9	13.909	23	2 36 24.52	2.0884	10 46 52.4	11.852
24	0 57 54.86	2.1253	N. 0 33 29.9	13.890	24	2 38 29.84	2.0890	N. 10 58 41.5	11.786

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 21.					THURSDAY 23.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	2 38 29.84	2.0890	N. 10 58 41.5	11.786	1	4 20 5.31	2.1525	N. 18 54 44.5	7.781
2	2 40 35.20	2.0897	11 10 26.7	11.721	2	4 22 14.51	2.1542	19 2 28.4	7.681
3	2 42 40.60	2.0902	11 22 8.0	11.654	3	4 24 23.82	2.1559	19 10 6.2	7.581
4	2 44 46.03	2.0909	11 33 45.2	11.586	4	4 26 33.22	2.1575	19 17 38.1	7.481
5	2 46 51.51	2.0917	11 45 18.3	11.517	5	4 28 42.72	2.1591	19 25 3.9	7.379
6	2 48 57.04	2.0926	11 56 47.3	11.447	6	4 30 52.31	2.1607	19 32 23.6	7.277
7	2 51 2.62	2.0934	12 8 12.0	11.377	7	4 33 2.00	2.1623	19 39 37.2	7.175
8	2 53 8.25	2.0942	12 19 32.5	11.307	8	4 35 11.79	2.1640	19 46 44.6	7.072
9	2 55 13.93	2.0952	12 30 48.8	11.236	9	4 37 21.68	2.1656	19 53 45.9	6.970
10	2 57 19.67	2.0961	12 42 0.8	11.162	10	4 39 31.66	2.1671	20 0 41.0	6.866
11	2 59 25.46	2.0971	12 53 8.3	11.088	11	4 41 41.73	2.1686	20 7 29.8	6.761
12	3 1 31.32	2.0982	13 4 11.4	11.015	12	4 43 51.89	2.1702	20 14 12.3	6.657
13	3 3 37.24	2.0992	13 15 10.1	10.941	13	4 46 2.15	2.1717	20 20 48.6	6.552
14	3 5 43.22	2.1002	13 26 4.3	10.865	14	4 48 12.50	2.1732	20 27 18.5	6.446
15	3 7 49.27	2.1014	13 36 53.9	10.788	15	4 50 22.94	2.1747	20 33 42.1	6.340
16	3 9 55.39	2.1026	13 47 38.9	10.711	16	4 52 33.47	2.1762	20 39 59.3	6.233
17	3 12 1.58	2.1037	13 58 19.2	10.633	17	4 54 44.08	2.1776	20 46 10.1	6.126
18	3 14 7.84	2.1049	14 8 54.9	10.555	18	4 56 54.78	2.1791	20 52 14.4	6.018
19	3 16 14.17	2.1062	14 19 25.8	10.476	19	4 59 5.57	2.1805	20 58 12.3	5.910
20	3 18 20.58	2.1075	14 29 52.0	10.396	20	5 1 16.44	2.1818	21 4 3.6	5.802
21	3 20 27.07	2.1088	14 40 13.3	10.315	21	5 3 27.39	2.1832	21 9 48.5	5.693
22	3 22 33.64	2.1102	14 50 29.8	10.233	22	5 5 38.42	2.1845	21 15 26.8	5.584
23	3 24 40.29	2.1115	15 0 41.3	10.151	23	5 7 49.53	2.1857	21 20 58.6	5.474
24	3 26 47.02	2.1129	N. 15 10 47.9	10.068	24	5 10 0.71	2.1870	N. 21 26 23.7	5.364
WEDNESDAY 22.					FRIDAY 24.				
0	3 28 53.84	2.1143	N. 15 20 49.5	9.985	0	5 12 11.97	2.1882	N. 21 31 42.3	5.254
1	3 31 0.74	2.1157	15 30 46.1	9.901	1	5 14 23.30	2.1895	21 36 54.2	5.143
2	3 33 7.73	2.1172	15 40 37.6	9.815	2	5 16 34.71	2.1907	21 41 59.5	5.032
3	3 35 14.80	2.1187	15 50 23.9	9.729	3	5 18 46.18	2.1917	21 46 58.1	4.921
4	3 37 21.97	2.1202	16 0 5.1	9.643	4	5 20 57.72	2.1928	21 51 50.0	4.809
5	3 39 29.22	2.1217	16 9 41.1	9.556	5	5 23 9.32	2.1939	21 56 35.2	4.697
6	3 41 36.57	2.1232	16 19 11.8	9.468	6	5 25 20.99	2.1949	22 1 13.6	4.584
7	3 43 44.01	2.1247	16 28 37.3	9.381	7	5 27 32.71	2.1959	22 5 45.3	4.472
8	3 45 51.54	2.1263	16 37 57.5	9.292	8	5 29 44.50	2.1969	22 10 10.2	4.359
9	3 47 59.17	2.1279	16 47 12.3	9.202	9	5 31 56.34	2.1978	22 14 28.4	4.246
10	3 50 6.89	2.1295	16 56 21.7	9.111	10	5 34 8.23	2.1987	22 18 39.7	4.132
11	3 52 14.71	2.1312	17 5 25.6	9.020	11	5 36 20.18	2.1995	22 22 44.2	4.017
12	3 54 22.63	2.1328	17 14 24.1	8.928	12	5 38 32.17	2.2003	22 26 41.8	3.903
13	3 56 30.64	2.1343	17 23 17.0	8.836	13	5 40 44.21	2.2011	22 30 32.6	3.789
14	3 58 38.75	2.1360	17 32 4.4	8.743	14	5 42 56.30	2.2017	22 34 16.5	3.674
15	4 0 46.96	2.1377	17 40 46.2	8.650	15	5 45 8.42	2.2023	22 37 53.5	3.559
16	4 2 55.27	2.1393	17 49 22.4	8.556	16	5 47 20.58	2.2030	22 41 23.6	3.444
17	4 5 3.68	2.1409	17 57 52.9	8.461	17	5 49 32.78	2.2036	22 44 46.8	3.329
18	4 7 12.18	2.1426	18 6 17.7	8.365	18	5 51 45.01	2.2041	22 48 3.1	3.214
19	4 9 20.79	2.1442	18 14 36.7	8.269	19	5 53 57.27	2.2046	22 51 12.5	3.098
20	4 11 29.49	2.1459	18 22 50.0	8.172	20	5 56 9.56	2.2050	22 54 14.9	2.982
21	4 13 38.30	2.1476	18 30 57.4	8.075	21	5 58 21.87	2.2053	22 57 10.3	2.866
22	4 15 47.20	2.1492	18 38 59.0	7.977	22	6 0 34.20	2.2057	22 59 58.8	2.751
23	4 17 56.21	2.1509	18 46 54.7	7.879	23	6 2 46.55	2.2060	23 2 40.4	2.634
24	4 20 5.31	2.1525	N. 18 54 44.5	7.781	24	6 4 58.92	2.2062	N. 23 5 14.9	2.517

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 25.					MONDAY 27.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	6 4 58.92	2.2062	N.23 5 14.9	2.517	0	7 50 7.51	2.1543	N.22 52 35.6	2.977
1	6 7 11.30	2.2064	23 7 42.4	2.401	1	7 52 16.70	2.1521	22 49 33.8	3.084
2	6 9 23.69	2.2065	23 10 3.0	2.285	2	7 54 25.76	2.1497	22 46 25.5	3.192
3	6 11 36.08	2.2066	23 12 16.6	2.167	3	7 56 34.67	2.1472	22 43 10.7	3.299
4	6 13 48.48	2.2066	23 14 23.1	2.051	4	7 58 43.43	2.1448	22 39 49.6	3.405
5	6 16 0.87	2.2065	23 16 22.7	1.934	5	8 0 52.05	2.1424	22 36 22.1	3.512
6	6 18 13.26	2.2065	23 18 15.2	1.817	6	8 3 0.52	2.1398	22 32 48.2	3.617
7	6 20 25.65	2.2063	23 20 0.8	1.701	7	8 5 8.83	2.1372	22 29 8.0	3.722
8	6 22 38.02	2.2061	23 21 39.3	1.583	8	8 7 16.99	2.1347	22 25 21.6	3.826
9	6 24 50.38	2.2059	23 23 10.8	1.467	9	8 9 25.00	2.1321	22 21 28.9	3.930
10	6 27 2.73	2.2057	23 24 35.3	1.349	10	8 11 32.84	2.1294	22 17 30.0	4.033
11	6 29 15.06	2.2053	23 25 52.7	1.232	11	8 13 40.53	2.1267	22 13 24.9	4.137
12	6 31 27.36	2.2048	23 27 3.2	1.116	12	8 15 48.05	2.1240	22 9 13.6	4.239
13	6 33 39.64	2.2044	23 28 6.6	0.999	13	8 17 55.41	2.1212	22 4 56.2	4.341
14	6 35 51.89	2.2039	23 29 3.1	0.882	14	8 20 2.60	2.1185	22 0 32.7	4.442
15	6 38 4.11	2.2033	23 29 52.5	0.765	15	8 22 9.63	2.1157	21 56 3.1	4.543
16	6 40 16.29	2.2027	23 30 34.9	0.649	16	8 24 16.48	2.1127	21 51 27.5	4.644
17	6 42 28.43	2.2020	23 31 10.4	0.532	17	8 26 23.16	2.1099	21 46 46.0	4.742
18	6 44 40.53	2.2012	23 31 38.8	0.415	18	8 28 29.67	2.1070	21 41 58.4	4.842
19	6 46 52.58	2.2004	23 32 0.2	0.299	19	8 30 36.00	2.1041	21 37 4.9	4.940
20	6 49 4.58	2.1996	23 32 14.7	0.183	20	8 32 42.16	2.1012	21 32 5.6	5.038
21	6 51 16.53	2.1987	23 32 22.2	+0.067	21	8 34 48.14	2.0982	21 27 0.4	5.136
22	6 53 28.42	2.1977	23 32 22.7	-0.049	22	8 36 53.94	2.0951	21 21 49.3	5.232
23	6 55 40.26	2.1967	N.23 32 16.3	0.165	23	8 38 59.55	2.0921	N.21 16 32.5	5.328
SUNDAY 26.					TUESDAY 28.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	6 57 52.03	2.1957	N.23 32 2.9	0.281	0	8 41 4.99	2.0891	N.21 11 9.9	5.424
1	7 0 3.74	2.1946	23 31 42.6	0.397	1	8 43 10.24	2.0860	21 5 41.6	5.518
2	7 2 15.38	2.1933	23 31 15.3	0.512	2	8 45 15.31	2.0829	21 0 7.7	5.612
3	7 4 26.94	2.1921	23 30 41.2	0.627	3	8 47 20.19	2.0797	20 54 28.1	5.707
4	7 6 38.43	2.1908	23 30 0.1	0.742	4	8 49 24.88	2.0767	20 48 42.9	5.799
5	7 8 49.84	2.1895	23 29 12.2	0.856	5	8 51 29.39	2.0736	20 42 52.2	5.892
6	7 11 1.17	2.1881	23 28 17.4	0.971	6	8 53 33.71	2.0704	20 36 55.9	5.984
7	7 13 12.41	2.1866	23 27 15.7	1.085	7	8 55 37.84	2.0672	20 30 54.1	6.075
8	7 15 23.56	2.1851	23 26 7.2	1.198	8	8 57 41.78	2.0641	20 24 46.9	6.165
9	7 17 34.62	2.1836	23 24 51.9	1.312	9	8 59 45.53	2.0608	20 18 34.3	6.255
10	7 19 45.59	2.1820	23 23 29.7	1.426	10	9 1 49.08	2.0577	20 12 16.3	6.344
11	7 21 56.46	2.1803	23 22 0.8	1.538	11	9 3 52.45	2.0545	20 5 53.0	6.432
12	7 24 7.23	2.1786	23 20 25.1	1.652	12	9 5 55.62	2.0512	19 59 24.4	6.521
13	7 26 17.89	2.1768	23 18 42.6	1.764	13	9 7 58.60	2.0481	19 52 50.5	6.607
14	7 28 28.45	2.1751	23 16 53.4	1.876	14	9 10 1.39	2.0448	19 46 11.5	6.694
15	7 30 38.90	2.1732	23 14 57.5	1.987	15	9 12 3.98	2.0416	19 39 27.2	6.780
16	7 32 49.24	2.1713	23 12 54.9	2.099	16	9 14 6.38	2.0384	19 32 37.9	6.864
17	7 34 59.46	2.1693	23 10 45.6	2.210	17	9 16 8.59	2.0352	19 25 43.5	6.949
18	7 37 9.56	2.1673	23 8 29.7	2.321	18	9 18 10.60	2.0318	19 18 44.0	7.033
19	7 39 19.54	2.1652	23 6 7.1	2.432	19	9 20 12.41	2.0286	19 11 39.5	7.117
20	7 41 29.39	2.1632	23 3 37.9	2.541	20	9 22 14.03	2.0254	19 4 30.0	7.199
21	7 43 39.12	2.1610	23 1 2.2	2.650	21	9 24 15.46	2.0222	18 57 15.6	7.280
22	7 45 48.71	2.1588	22 58 19.9	2.760	22	9 26 16.69	2.0188	18 49 56.4	7.361
23	7 47 58.18	2.1567	22 55 31.0	2.869	23	9 28 17.72	2.0156	18 42 32.3	7.442
24	7 50 7.51	2.1543	N.22 52 35.6	2.977	24	9 30 18.56	2.0124	N.18 35 3.4	7.521

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 29.					FRIDAY 31.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	9 30 18.56	2.0124	N. 18 35 3.4	7.521	0	11 3 28.62	1.8795	N. 11 15 33.5	10.523
1	9 32 19.21	2.0092	18 27 29.8	7.600	1	11 5 21.33	1.8775	11 5 0.7	10.569
2	9 34 19.66	2.0059	18 19 51.4	7.679	2	11 7 13.92	1.8755	10 54 25.2	10.614
3	9 36 19.92	2.0027	18 12 8.3	7.757	3	11 9 6.39	1.8736	10 43 47.0	10.659
4	9 38 19.99	1.9996	18 4 20.6	7.833	4	11 10 58.75	1.8717	10 33 6.1	10.702
5	9 40 19.87	1.9964	17 56 28.3	7.909	5	11 12 50.99	1.8698	10 22 22.7	10.745
6	9 42 19.56	1.9932	17 48 31.5	7.984	6	11 14 43.13	1.8682	10 11 36.7	10.788
7	9 44 19.05	1.9899	17 40 30.2	8.059	7	11 16 35.17	1.8664	10 0 48.1	10.830
8	9 46 18.35	1.9868	17 32 24.4	8.133	8	11 18 27.10	1.8647	9 49 57.1	10.871
9	9 48 17.47	1.9837	17 24 14.2	8.207	9	11 20 18.94	1.8632	9 39 3.6	10.912
10	9 50 16.39	1.9805	17 15 59.6	8.280	10	11 22 10.68	1.8615	9 28 7.7	10.951
11	9 52 15.13	1.9774	17 7 40.6	8.352	11	11 24 2.32	1.8599	9 17 9.5	10.990
12	9 54 13.68	1.9743	16 59 17.4	8.422	12	11 25 53.87	1.8584	9 6 8.9	11.029
13	9 56 12.05	1.9712	16 50 49.9	8.493	13	11 27 45.33	1.8570	8 55 6.0	11.067
14	9 58 10.23	1.9681	16 42 18.2	8.562	14	11 29 36.71	1.8557	8 44 0.9	11.103
15	10 0 8.22	1.9650	16 33 42.4	8.632	15	11 31 28.01	1.8543	8 32 53.6	11.140
16	10 2 6.03	1.9620	16 25 2.4	8.701	16	11 33 19.23	1.8530	8 21 44.1	11.176
17	10 4 3.66	1.9591	16 16 18.3	8.769	17	11 35 10.37	1.8517	8 10 32.5	11.211
18	10 6 1.12	1.9561	16 7 30.1	8.836	18	11 37 1.43	1.8505	7 59 18.8	11.246
19	10 7 58.39	1.9530	15 58 38.0	8.902	19	11 38 52.43	1.8494	7 48 3.0	11.280
20	10 9 55.48	1.9501	15 49 41.9	8.967	20	11 40 43.36	1.8482	7 36 45.2	11.313
21	10 11 52.40	1.9472	15 40 41.9	9.032	21	11 42 34.22	1.8472	7 25 25.4	11.346
22	10 13 49.14	1.9442	15 31 38.0	9.097	22	11 44 25.03	1.8462	7 14 3.7	11.377
23	10 15 45.71	1.9414	N. 15 22 30.3	9.160	23	11 46 15.77	1.8452	N. 7 2 40.1	11.409
THURSDAY 30.					SATURDAY, AUGUST 1.				
0	10 17 42.11	1.9385	N. 15 13 18.8	9.223	0	11 48 6.46	1.8444	N. 6 51 14.6	11.440
1	10 19 38.33	1.9357	15 4 3.5	9.285	PHASES OF THE MOON.				
2	10 21 34.39	1.9329	14 54 44.6	9.346					
3	10 23 30.28	1.9301	14 45 22.0	9.407					
4	10 25 26.00	1.9273	14 35 55.7	9.467					
5	10 27 21.56	1.9246	14 26 25.9	9.527	d h m				
6	10 29 16.95	1.9219	14 16 52.5	9.586	☾	First Quarter	July	6	8 25.0
7	10 31 12.19	1.9192	14 7 15.6	9.643	○	Full Moon	13	9 47.9	
8	10 33 7.26	1.9166	13 57 35.3	9.701	☾	Last Quarter	20	0 1.7	
9	10 35 2.18	1.9141	13 47 51.5	9.757	●	New Moon	27	19 16.8	
10	10 36 56.95	1.9115	13 38 4.4	9.813	d h				
11	10 38 51.56	1.9089	13 28 13.9	9.868					
12	10 40 46.02	1.9064	13 18 20.2	9.922					
13	10 42 40.33	1.9040	13 8 23.2	9.977					
14	10 44 34.50	1.9016	12 58 23.0	10.029					
15	10 46 28.52	1.8992	12 48 19.7	10.082					
16	10 48 22.40	1.8968	12 38 13.2	10.134					
17	10 50 16.14	1.8946	12 28 3.6	10.185					
18	10 52 9.75	1.8923	12 17 51.0	10.236					
19	10 54 3.22	1.8901	12 7 35.3	10.286					
20	10 55 56.56	1.8878	11 57 16.7	10.334					
21	10 57 49.76	1.8857	11 46 55.2	10.383					
22	10 59 42.84	1.8836	11 36 30.8	10.431					
23	11 1 35.79	1.8815	11 26 3.5	10.477					
24	11 3 28.62	1.8795	N. 11 15 33.5	10.523					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	SUN	W.	31 13 5	3416	32 35 3	3420	33 56 56	3424	35 18 45	3427
	Spica	E.	72 25 17	3091	70 56 56	3096	69 28 42	3100	68 0 33	3104
	Antares	E.	118 19 39	3095	116 51 23	3098	115 23 11	3100	113 55 2	3102
2	SUN	W.	42 7 2	3439	43 28 34	3440	44 50 4	3441	46 11 33	3442
	Spica	E.	60 40 51	3120	59 13 6	3123	57 45 25	3125	56 17 46	3127
	Antares	E.	106 34 49	3110	105 6 51	3111	103 38 55	3111	102 10 59	3111
3	SUN	W.	52 58 57	3440	54 20 28	3438	55 42 1	3436	57 3 37	3433
	JUPITER	W.	19 27 1	3187	20 53 26	3182	22 19 57	3176	23 46 35	3171
	Spica	E.	49 0 8	3136	47 32 43	3138	46 5 19	3139	44 37 57	3140
	Antares	E.	94 51 16	3109	93 23 17	3107	91 55 15	3104	90 27 11	3101
4	SUN	W.	63 52 29	3414	65 14 30	3409	66 36 36	3403	67 58 49	3397
	JUPITER	W.	31 1 25	3144	32 28 44	3136	33 56 10	3130	35 23 43	3123
	Spica	E.	37 21 27	3147	35 54 14	3149	34 27 4	3152	32 59 57	3156
	Antares	E.	83 5 56	3084	81 37 27	3080	80 8 53	3075	78 40 13	3069
5	SUN	W.	74 51 50	3359	76 14 53	3350	77 38 7	3340	79 1 32	3330
	JUPITER	W.	42 43 42	3084	44 12 11	3075	45 40 51	3065	47 9 43	3056
	Antares	E.	71 15 4	3037	69 45 37	3030	68 16 1	3022	66 46 15	3013
	α Aquilæ	E.	115 5 15	3865	113 51 20	3839	112 36 58	3812	111 22 8	3786
6	SUN	W.	86 1 41	3273	87 26 24	3260	88 51 21	3247	90 16 34	3233
	JUPITER	W.	54 37 11	3001	56 7 22	2989	57 37 49	2976	59 8 32	2963
	Antares	E.	59 14 38	2965	57 43 42	2955	56 12 34	2945	54 41 12	2935
	α Aquilæ	E.	105 1 24	3666	103 44 1	3645	102 26 16	3624	101 8 8	3604
7	SUN	W.	97 26 54	3159	98 53 52	3143	100 21 9	3126	101 48 47	3109
	JUPITER	W.	66 46 20	2893	68 18 48	2877	69 51 36	2862	71 24 44	2846
	Antares	E.	47 0 53	2877	45 28 5	2866	43 55 3	2855	42 21 46	2844
	α Aquilæ	E.	94 32 8	3511	93 11 55	3494	91 51 24	3477	90 30 34	3461
8	SUN	W.	109 12 11	3081	110 41 58	3002	112 12 8	2983	113 42 42	2964
	JUPITER	W.	79 15 40	2762	80 50 58	2745	82 26 38	2727	84 2 42	2708
	Antares	E.	34 31 50	2792	32 57 12	2785	31 22 25	2779	29 47 29	2774
	α Aquilæ	E.	83 42 11	3391	82 19 44	3379	80 57 3	3368	79 34 10	3358
	Fomalhaut	E.	117 11 32	2923	115 39 42	2900	114 7 23	2876	112 34 34	2853
9	SUN	W.	121 21 33	2867	122 54 34	2847	124 28 1	2827	126 1 53	2807
	JUPITER	W.	92 9 10	2617	93 47 42	2598	95 26 40	2580	97 6 3	2561
	Spica	W.	26 22 3	2708	27 58 32	2675	29 35 46	2642	31 13 44	2611
	α Aquilæ	E.	72 37 15	3324	71 13 31	3321	69 49 43	3320	68 25 55	3320
	Fomalhaut	E.	104 43 9	2743	103 7 26	2722	101 31 16	2701	99 54 38	2681
	α Pegasi	E.	120 11 57	3106	118 43 55	3069	117 15 8	3035	115 45 39	3002
10	JUPITER	W.	105 29 29	2467	107 11 28	2449	108 53 53	2431	110 36 44	2412
	Spica	W.	39 33 32	2478	41 15 17	2454	42 57 35	2431	44 40 26	2409
	α Aquilæ	E.	61 27 53	3358	60 4 48	3374	58 42 2	3393	57 19 38	3417
	Fomalhaut	E.	91 44 40	2583	90 5 22	2565	88 25 39	2547	86 45 31	2530
	α Pegasi	E.	108 8 19	2853	106 35 0	2827	105 1 8	2802	103 26 43	2777

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	SUN	W.	36 40 31	3430	38 2 13	3433	39 23 52	3436	40 45 28	3438
	Spica	E.	66 32 28	3108	65 4 28	3111	63 36 32	3114	62 8 40	3117
	Antares	E.	112 26 55	3104	110 58 51	3106	109 30 49	3107	108 2 48	3109
2	SUN	W.	47 33 2	3443	48 54 30	3443	50 15 58	3442	51 37 27	3441
	Spica	E.	54 50 10	3129	53 22 36	3131	51 55 5	3133	50 27 36	3134
	Antares	E.	100 43 3	3111	99 15 7	3111	97 47 11	3110	96 19 14	3110
3	SUN	W.	58 25 16	3431	59 46 58	3428	61 8 43	3423	62 30 33	3418
	JUPITER	W.	25 13 19	3165	26 40 10	3159	28 7 8	3153	29 34 13	3148
	Spica	E.	43 10 36	3141	41 43 16	3143	40 15 58	3144	38 48 42	3145
	Antares	E.	88 59 3	3099	87 30 52	3096	86 2 38	3092	84 34 19	3088
4	SUN	W.	69 21 9	3391	70 43 36	3383	72 6 12	3375	73 28 56	3367
	JUPITER	W.	36 51 25	3116	38 19 15	3109	39 47 14	3101	41 15 23	3092
	Spica	E.	31 32 55	3160	30 5 58	3166	28 39 9	3173	27 12 28	3181
	Antares	E.	77 11 26	3064	75 42 32	3058	74 13 31	3052	72 44 22	3045
5	SUN	W.	80 25 9	3320	81 48 57	3309	83 12 58	3297	84 37 13	3285
	JUPITER	W.	48 38 47	3046	50 8 3	3035	51 37 32	3024	53 7 14	3013
	Antares	E.	65 16 18	3004	63 46 11	2995	62 15 52	2985	60 45 21	2975
	α Aquilæ	E.	110 6 51	3760	108 51 7	3736	107 34 58	3712	106 18 23	3689
6	SUN	W.	91 42 4	3219	93 7 50	3205	94 33 53	3190	96 0 14	3174
	JUPITER	W.	60 39 31	2950	62 10 47	2936	63 42 20	2922	65 14 11	2908
	Antares	E.	53 9 37	2924	51 37 48	2912	50 5 44	2901	48 33 26	2889
	α Aquilæ	E.	99 49 38	3584	98 30 46	3565	97 11 34	3546	95 52 1	3528
7	SUN	W.	103 16 45	3092	104 45 4	3075	106 13 44	3057	107 42 46	3039
	JUPITER	W.	72 58 13	2830	74 32 2	2813	76 6 13	2796	77 40 45	2779
	Antares	E.	40 48 15	2832	39 14 29	2821	37 40 29	2811	36 6 16	2801
	α Aquilæ	E.	89 9 27	3446	87 48 2	3431	86 26 21	3417	85 4 24	3403
8	SUN	W.	115 13 39	2945	116 45 1	2926	118 16 47	2906	119 48 58	2887
	JUPITER	W.	85 39 11	2690	87 16 4	2672	88 53 21	2654	90 31 3	2635
	Antares	E.	28 12 26	2772	26 37 21	2772	25 2 17	2776	23 27 19	2786
	α Aquilæ	E.	78 11 6	3349	76 47 51	3341	75 24 26	3334	74 0 54	3328
	Fomalhaut	E.	111 1 15	2831	109 27 27	2808	107 53 10	2786	106 18 24	2764
9	SUN	W.	127 36 12	2788	129 10 56	2768	130 46 6	2748	132 21 42	2728
	JUPITER	W.	98 45 52	2542	100 26 7	2523	102 6 48	2504	103 47 55	2485
	Spica	W.	32 52 25	2581	34 31 46	2553	36 11 45	2527	37 52 21	2502
	α Aquilæ	E.	67 2 7	3323	65 38 22	3328	64 14 43	3335	62 51 12	3345
	Fomalhaut	E.	98 17 32	2660	96 39 59	2640	95 1 59	2621	93 23 33	2602
	α Pegasi	E.	114 15 29	2970	112 44 39	2939	111 13 10	2909	109 41 3	2880
10	JUPITER	W.	112 20 1	2395	114 3 43	2378	115 47 50	2360	117 32 22	2343
	Spica	W.	46 23 48	2387	48 7 41	2366	49 52 4	2346	51 36 56	2327
	α Aquilæ	E.	55 57 41	3446	54 36 16	3479	53 15 28	3517	51 55 22	3562
	Fomalhaut	E.	85 5 0	2513	83 24 5	2497	81 42 48	2482	80 1 9	2467
	α Pegasi	E.	101 51 45	2754	100 16 16	2732	98 40 19	2711	97 3 54	2691

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	III ^h	P. L. of Diff.	VI ^h	P. L. of Diff.	IX ^h	P. L. of Diff.
11	Spica W.	53 22 16	2308	55 8 4	2289	56 54 19	2271	58 41 0	2254
	Fomalhaut E.	78 19 10	2453	76 36 51	2439	74 54 12	2427	73 11 16	2416
	α Pegasi E.	95 27 1	2672	93 49 43	2653	92 12 0	2636	90 33 54	2621
	SATURN E.	114 19 7	2270	112 32 23	2253	110 45 14	2237	108 57 41	2221
12	Spica W.	67 40 33	2177	69 29 35	2164	71 18 57	2151	73 8 39	2139
	Antares W.	22 16 8	2332	24 0 52	2311	25 46 34	2276	27 33 8	2245
	Fomalhaut E.	64 32 56	2373	62 48 42	2369	61 4 22	2366	59 19 58	2364
	α Pegasi E.	82 18 39	2560	80 38 49	2532	78 58 48	2545	77 18 38	2540
	SATURN E.	99 54 16	2150	98 4 32	2137	96 14 29	2125	94 24 7	2113
	α Arietis E.	125 26 49	2348	123 42 0	2327	121 56 40	2307	120 10 51	2288
13	Spica W.	82 21 24	2089	84 12 41	2081	86 4 10	2073	87 55 50	2067
	Antares W.	36 35 37	2141	38 25 33	2127	40 15 52	2114	42 6 30	2102
	Fomalhaut E.	50 38 11	2385	48 54 14	2397	47 10 36	2412	45 27 18	2430
	α Pegasi E.	68 56 46	2540	67 16 28	2546	65 36 19	2554	63 56 21	2564
	SATURN E.	85 8 10	2065	83 16 16	2057	81 24 10	2050	79 31 53	2044
	α Arietis E.	111 15 31	2214	109 27 25	2203	107 39 2	2193	105 50 24	2184
14	Spica W.	97 16 16	2047	99 8 37	2046	101 0 59	2045	102 53 23	2045
	Antares W.	51 23 25	2064	53 15 20	2060	55 7 21	2056	56 59 28	2054
	α Pegasi E.	55 41 21	2661	54 3 48	2691	52 26 56	2725	50 50 49	2764
	SATURN E.	70 8 27	2023	68 15 29	2021	66 22 28	2020	64 29 25	2020
	α Arietis E.	96 44 18	2154	94 54 41	2152	93 5 1	2151	91 15 18	2150
	Aldebaran E.	128 4 12	2023	126 11 13	2021	124 18 12	2020	122 25 9	2019
15	Antares W.	66 20 28	2055	68 12 36	2058	70 4 39	2062	71 56 37	2066
	SATURN E.	55 4 29	2030	53 11 41	2034	51 18 59	2039	49 26 24	2044
	α Arietis E.	82 6 59	2162	80 17 33	2167	78 28 15	2173	76 39 7	2180
	Aldebaran E.	112 59 54	2026	111 7 0	2029	109 14 11	2033	107 21 29	2038
16	Antares W.	81 14 25	2099	83 5 26	2107	84 56 14	2116	86 46 49	2126
	α Aquilæ W.	43 57 38	3212	45 12 28	3210	46 29 4	3220	47 47 17	3240
	SATURN E.	40 6 6	2082	38 14 40	2092	36 23 29	2103	34 32 34	2114
	α Arietis E.	67 36 44	2233	65 49 5	2247	64 1 47	2262	62 14 50	2277
	Aldebaran E.	98 0 17	2073	96 8 36	2082	94 17 9	2091	92 25 56	2101
17	Antares W.	95 55 44	2182	97 44 39	2194	99 33 15	2207	101 21 31	2221
	α Aquilæ W.	54 37 9	3269	56 1 57	3234	57 27 26	3204	58 53 31	3178
	SATURN E.	25 22 40	2183	23 33 47	2200	21 45 19	2218	19 57 19	2239
	α Arietis E.	53 26 33	2375	51 42 23	2399	49 58 47	2425	48 15 48	2453
	Aldebaran E.	83 13 50	2157	81 24 17	2169	79 35 3	2182	77 46 8	2195
	VENUS E.	111 49 51	2058	109 57 47	2071	108 6 2	2084	106 14 38	2098
	SUN E.	129 26 8	2445	127 43 37	2458	126 1 24	2471	124 19 30	2485
18	Antares W.	110 17 41	2294	112 3 50	2309	113 49 36	2324	115 35 0	2341
	α Aquilæ W.	66 10 15	3101	67 38 24	3094	69 6 41	3089	70 35 4	3087
	Aldebaran E.	68 46 37	2265	66 59 46	2280	65 13 17	2294	63 27 9	2309
	VENUS E.	97 3 2	2171	95 13 51	2186	93 25 3	2202	91 36 38	2218
	SUN E.	115 55 4	2559	114 15 13	2575	112 35 44	2591	110 56 36	2607
19	α Aquilæ W.	77 57 2	3100	79 25 12	3107	80 53 13	3115	82 21 4	3124

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
11	Spica W.	60 28 7	2237	62 15 39	2222	64 3 34	2206	65 51 52	2191
	Fomalhaut E.	71 28 4	2405	69 44 36	2395	68 0 54	2387	66 17 0	2380
	α Pegasi E.	88 55 28	2607	87 16 42	2593	85 37 37	2581	83 58 15	2570
	SATURN E.	107 9 44	2206	105 21 25	2190	103 32 43	2176	101 43 40	2163
12	Spica W.	74 58 39	2127	76 48 57	2116	78 39 31	2106	80 30 20	2097
	Antares W.	29 20 28	2218	31 8 28	2195	32 57 2	2176	34 46 6	2158
	Fomalhaut E.	57 35 31	2364	55 51 3	2366	54 6 39	2370	52 22 21	2376
	α Pegasi E.	75 38 21	2537	73 57 59	2535	72 17 34	2535	70 37 9	2536
	SATURN E.	92 33 27	2102	90 42 30	2092	88 51 18	2082	86 59 51	2073
	α Arietis E.	118 24 34	2271	116 37 52	2255	114 50 46	2240	113 3 18	2227
13	Spica W.	89 47 41	2061	91 39 40	2057	93 31 46	2053	95 23 58	2050
	Antares W.	43 57 26	2092	45 48 37	2083	47 40 2	2076	49 31 39	2070
	Fomalhaut E.	43 44 25	2453	42 2 5	2480	40 20 24	2513	38 39 29	2552
	α Pegasi E.	62 16 37	2577	60 37 11	2593	58 58 7	2612	57 19 29	2635
	SATURN E.	77 39 27	2038	75 46 52	2033	73 54 10	2029	72 1 21	2026
	α Arietis E.	104 1 32	2176	102 12 28	2169	100 23 13	2163	98 33 49	2158
14	Spica W.	104 45 48	2046	106 38 11	2047	108 30 32	2050	110 22 49	2054
	Antares W.	58 51 38	2052	60 43 51	2052	62 36 4	2052	64 28 17	2053
	α Pegasi E.	49 15 33	2808	47 41 15	2859	46 8 4	2916	44 36 7	2981
	SATURN E.	62 36 22	2021	60 43 20	2022	58 50 20	2024	56 57 23	2027
	α Arietis E.	89 25 35	2150	87 35 52	2151	85 46 10	2153	83 56 32	2157
	Aldebaran E.	120 32 4	2019	118 38 59	2020	116 45 55	2021	114 52 53	2023
15	Antares W.	73 48 29	2071	75 40 13	2077	77 31 47	2083	79 23 11	2090
	SATURN E.	47 33 59	2050	45 41 44	2057	43 49 39	2065	41 57 46	2073
	α Arietis E.	74 50 10	2189	73 1 26	2198	71 12 56	2220	69 24 41	2220
	Aldebaran E.	105 28 55	2044	103 36 30	2051	101 44 15	2058	99 52 10	2065
16	Antares W.	88 37 9	2136	90 27 13	2147	92 17 0	2158	94 6 31	2170
	α Aquilæ W.	49 6 57	3470	50 27 55	3409	51 50 1	3356	53 13 8	3310
	SATURN E.	32 41 56	2126	30 51 36	2139	29 1 36	2153	27 11 57	2167
	α Arietis E.	60 28 17	2294	58 42 9	2313	56 56 28	2333	55 11 15	2353
	Aldebaran E.	90 34 58	2111	88 44 16	2122	86 53 50	2133	85 3 41	2145
17	Antares W.	103 9 27	2235	104 57 2	2249	106 44 17	2264	108 31 10	2279
	α Aquilæ W.	60 20 8	3156	61 47 11	3138	63 14 35	3123	64 42 17	3110
	SATURN E.	18 9 50	2263	16 22 56	2291	14 36 43	2325	12 51 20	2368
	α Arietis E.	46 33 29	2483	44 51 51	2515	43 10 58	2549	41 30 53	2586
	Aldebaran E.	75 57 32	2208	74 9 17	2222	72 21 23	2236	70 33 49	2251
	VENUS E.	104 23 35	2112	102 32 54	2126	100 42 34	2140	98 52 36	2156
	SUN E.	122 37 56	2499	120 56 42	2515	119 15 49	2529	117 35 16	2544
18	Antares W.	117 20 0	2357	119 4 37	2373	120 48 50	2390	122 32 39	2407
	α Aquilæ W.	72 3 30	3086	73 31 57	3087	75 0 22	3090	76 28 44	3094
	Aldebaran E.	61 41 23	2324	59 55 59	2340	58 10 58	2355	56 26 19	2371
	VENUS E.	89 48 37	2234	88 1 0	2250	86 13 48	2266	84 26 59	2283
	SUN E.	109 17 49	2623	107 39 25	2639	106 1 22	2655	104 23 41	2671
19	α Aquilæ W.	83 48 44	3135	85 16 11	3147	86 43 24	3159	88 10 22	3173

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
19	Fomalhaut W.	42 46 25	2789	44 21 7	2780	45 56 1	2774	47 31 4	2769
	Aldebaran E.	54 42 3	2387	52 58 9	2403	51 14 38	2418	49 31 29	2433
	VENUS E.	82 40 35	2300	80 54 35	2317	79 9 0	2333	77 23 48	2350
	SUN E.	102 46 22	2687	101 9 25	2704	99 32 50	2720	97 56 37	2736
20	α Aquilæ W.	89 37 4	3188	91 3 28	3203	92 29 34	3219	93 55 21	3236
	Fomalhaut W.	55 26 59	2772	57 2 3	2777	58 37 1	2782	60 11 53	2788
	α Pegasi W.	42 12 23	3509	43 32 37	3462	44 53 44	3422	46 15 36	3388
	SATURN W.	17 15 50	2551	18 55 52	2559	20 35 44	2567	22 15 25	2576
	Aldebaran E.	41 1 17	2513	39 20 21	2529	37 39 48	2545	35 59 37	2560
	VENUS E.	68 43 55	2434	67 1 9	2451	65 18 47	2467	63 36 48	2484
	SUN E.	90 0 51	2817	88 26 45	2833	86 53 1	2849	85 19 37	2864
21	α Aquilæ W.	100 58 48	3336	102 22 18	3358	103 45 22	3382	105 7 59	3407
	Fomalhaut W.	68 3 58	2827	69 37 51	2835	71 11 33	2844	72 45 4	2854
	α Pegasi W.	53 13 8	3276	54 37 48	3263	56 2 43	3252	57 27 51	3243
	SATURN W.	30 30 24	2630	32 8 38	2642	33 46 36	2654	35 14 18	2666
	Aldebaran E.	27 44 10	2643	26 6 13	2660	24 28 39	2678	22 51 29	2696
	VENUS E.	55 12 42	2567	53 33 2	2584	51 53 45	2600	50 14 50	2617
	SUN E.	77 37 30	2940	76 6 2	2955	74 34 53	2969	73 4 1	2983
22	Fomalhaut W.	80 29 28	2904	82 1 42	2914	83 33 43	2924	85 5 31	2935
	α Pegasi W.	64 35 32	3221	66 1 16	3220	67 27 1	3220	68 52 46	3222
	SATURN W.	43 28 53	2723	45 5 2	2734	46 40 56	2745	48 16 36	2756
	VENUS E.	42 5 57	2701	40 29 18	2719	38 53 3	2736	37 17 11	2754
	SUN E.	65 34 5	3052	64 4 56	3065	62 36 3	3077	61 7 25	3089
23	Fomalhaut W.	92 41 11	2988	94 11 39	2998	95 41 54	3009	97 11 55	3020
	α Pegasi W.	76 0 56	3236	77 26 22	3241	78 51 43	3247	80 16 57	3252
	SATURN W.	56 11 27	2807	57 45 45	2817	59 19 51	2826	60 53 45	2835
	α Arietis W.	32 25 27	3307	33 49 30	3277	35 14 8	3252	36 39 16	3231
	VENUS E.	29 24 3	2855	27 50 46	2879	26 18 1	2905	24 45 49	2935
	SUN E.	53 47 58	3148	52 20 47	3159	50 53 49	3170	49 27 5	3181
24	Fomalhaut W.	104 38 36	3076	106 7 15	3087	107 35 40	3099	109 3 51	3111
	α Pegasi W.	87 21 23	3285	88 45 52	3293	90 10 11	3301	91 34 21	3310
	SATURN W.	68 40 18	2879	70 13 4	2887	71 45 39	2895	73 18 4	2902
	α Arietis W.	43 49 56	3168	45 16 44	3160	46 43 41	3154	48 10 45	3150
	SUN E.	42 16 29	3232	40 50 57	3242	39 25 37	3251	38 0 28	3260
25	Fomalhaut W.	116 21 4	3174	117 47 45	3188	119 14 9	3202	120 40 17	3216
	α Pegasi W.	98 32 36	3358	99 55 41	3368	101 18 34	3379	102 41 15	3391
	SATURN W.	80 57 48	2939	82 29 18	2945	84 0 40	2952	85 31 53	2958
	α Arietis W.	55 27 3	3140	56 54 24	3140	58 21 45	3140	59 49 6	3140
	SUN E.	30 57 24	3305	29 33 18	3315	28 9 24	3324	26 45 40	3333
30	SUN W.	24 16 16	3470	25 37 13	3467	26 58 14	3465	28 19 18	3463
	Antares E.	97 59 33	3110	96 31 36	3110	95 3 38	3109	93 35 39	3108
31	SUN W.	35 5 17	3449	36 26 38	3446	37 48 2	3442	39 9 31	3438
	Antares E.	86 15 25	3101	84 47 17	3099	83 19 6	3096	81 50 52	3094

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
19	Fomalhaut W.	49 6 13	2766	50 41 26	2766	52 16 39	2767	53 51 51	2769
	Aldebaran E.	47 48 42	2449	46 6 17	2465	44 24 15	2481	42 42 35	2497
	VENUS E.	75 39 1	2367	73 54 38	2384	72 10 40	2400	70 27 5	2417
	SUN E.	96 20 45	2753	94 45 15	2769	93 10 6	2785	91 35 18	2801
20	α Aquilæ W.	95 20 47	3254	96 45 52	3274	98 10 34	3294	99 34 53	3314
	Fomalhaut W.	61 46 38	2795	63 21 13	2802	64 55 38	2810	66 29 53	2818
	α Pegasi W.	47 38 7	3358	49 1 12	3332	50 24 47	3310	51 48 47	3292
	SATURN W.	23 54 54	2586	25 34 9	2596	27 13 10	2607	28 51 55	2619
	Aldebaran E.	34 19 47	2576	32 40 19	2593	31 1 14	2609	29 22 31	2626
	VENUS E.	61 55 12	2501	60 14 0	2517	58 33 11	2534	56 52 45	2551
	SUN E.	83 46 32	2880	82 13 48	2895	80 41 23	2910	79 9 17	2925
21	α Aquilæ W.	106 30 8	3433	107 51 47	3460	109 12 56	3488	110 33 34	3516
	Fomalhaut W.	74 18 22	2864	75 51 27	2873	77 24 20	2883	78 57 0	2893
	α Pegasi W.	58 53 10	3236	60 18 37	3230	61 44 10	3225	63 9 49	3222
	SATURN W.	37 1 44	2678	38 38 54	2689	40 15 49	2700	41 52 29	2712
	Aldebaran E.	21 14 44	2716	19 38 26	2739	18 2 38	2764	16 27 22	2790
	VENUS E.	48 36 18	2634	46 58 9	2650	45 20 22	2667	43 42 58	2684
	SUN E.	71 33 27	2997	70 3 11	3011	68 33 13	3025	67 3 31	3038
22	Fomalhaut W.	86 37 6	2946	88 8 27	2956	89 39 35	2966	91 10 30	2977
	α Pegasi W.	70 18 29	3224	71 44 10	3226	73 9 49	3228	74 35 25	3232
	SATURN W.	49 52 1	2766	51 27 13	2777	53 2 11	2787	54 36 55	2797
	VENUS E.	35 41 43	2773	34 6 39	2792	32 32 1	2812	30 57 49	2833
	SUN E.	59 39 2	3102	58 10 55	3114	56 43 2	3125	55 15 23	3137
23	Fomalhaut W.	98 41 43	3031	100 11 17	3043	101 40 37	3054	103 9 43	3065
	α Pegasi W.	81 42 5	3258	83 7 6	3264	84 31 59	3270	85 56 45	3277
	SATURN W.	62 27 27	2845	64 0 57	2854	65 34 15	2862	67 7 22	2871
	α Arietis W.	38 4 48	3113	39 30 41	3198	40 56 52	3186	42 23 18	3176
	VENUS E.	23 14 14	2968	21 43 20	3005	20 13 12	3048	18 43 59	3100
	SUN E.	48 0 33	3192	46 34 14	3202	45 8 7	3212	43 42 12	3222
24	Fomalhaut W.	110 31 47	3123	111 59 29	3135	113 26 56	3148	114 54 8	3161
	α Pegasi W.	92 58 21	3319	94 22 11	3328	95 45 50	3337	97 9 19	3347
	SATURN W.	74 50 20	2910	76 22 26	2918	77 54 22	2925	79 26 9	2932
	α Arietis W.	49 37 54	3147	51 5 7	3144	52 32 23	3142	53 59 42	3141
	SUN E.	36 35 30	3269	35 10 42	3279	33 46 6	3288	32 21 40	3296
25	Fomalhaut W.	122 6 7	3231	123 31 39	3247	124 56 53	3264	126 21 47	3280
	α Pegasi W.	104 3 42	3403	105 25 55	3415	106 47 54	3428	108 9 38	3441
	SATURN W.	87 2 59	2964	88 33 57	2970	90 4 47	2976	91 35 30	2982
	α Arietis W.	61 16 27	3141	62 43 47	3143	64 11 5	3144	65 38 21	3145
	SUN E.	25 22 6	3342	23 58 43	3352	22 35 32	3362	21 12 31	3372
30	SUN W.	29 40 24	3460	31 1 33	3457	32 22 45	3454	33 44 0	3452
	Antares E.	92 7 39	3107	90 39 38	3106	89 11 35	3105	87 43 31	3103
31	SUN W.	40 31 4	3435	41 52 41	3431	43 14 23	3426	44 36 10	3422
	Antares E.	80 22 35	3091	78 54 15	3088	77 25 51	3085	75 57 23	3081

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to		Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Subtracted from Apparent Time.				
Sat.	1	h m s	s	° ' "	"	' "	s	m s	s		
SUN.	2	8 44 55.65	9.716	N. 18 4 6.4	- 37.66	15 47.45	66.63	6 8.73	0.141		
Mon.	3	8 48 48.52	9.690	17 48 53.8	38.39	15 47.59	66.54	6 5.05	0.166		
		8 52 40.77	9.664	17 33 23.7	39.10	15 47.72	66.45	6 0.75	0.192		
Tues.	4	8 56 32.40	9.638	17 17 36.6	- 39.80	15 47.86	66.36	5 55.84	0.218		
Wed.	5	9 0 23.40	9.613	17 1 32.6	40.49	15 48.01	66.27	5 50.30	0.244		
Thur.	6	9 4 13.77	9.587	16 45 12.2	41.17	15 48.16	66.19	5 44.14	0.270		
Frid.	7	9 8 3.54	9.562	16 28 35.8	- 41.84	15 48.31	66.10	5 37.37	0.295		
Sat.	8	9 11 52.69	9.537	16 11 43.4	42.50	15 48.46	66.01	5 30.00	0.320		
SUN.	9	9 15 41.25	9.512	15 54 35.5	43.15	15 48.62	65.92	5 22.02	0.345		
Mon.	10	9 19 29.22	9.487	15 37 12.2	- 43.78	15 48.78	65.84	5 13.45	0.369		
Tues.	11	9 23 16.59	9.462	15 19 34.1	44.40	15 48.94	65.76	5 4.30	0.393		
Wed.	12	9 27 3.42	9.439	15 1 41.3	45.00	15 49.10	65.68	4 54.59	0.416		
Thur.	13	9 30 49.67	9.416	14 43 34.2	- 45.59	15 49.27	65.60	4 44.32	0.439		
Frid.	14	9 34 35.38	9.394	14 25 12.9	46.18	15 49.44	65.52	4 33.51	0.462		
Sat.	15	9 38 20.56	9.372	14 6 37.8	46.75	15 49.61	65.44	4 22.17	0.484		
SUN.	16	9 42 5.23	9.351	13 47 49.2	- 47.30	15 49.79	65.37	4 10.31	0.505		
Mon.	17	9 45 49.39	9.330	13 28 47.4	47.84	15 49.97	65.29	3 57.95	0.525		
Tues.	18	9 49 33.06	9.309	13 9 32.8	48.37	15 50.15	65.22	3 45.10	0.545		
Wed.	19	9 53 16.24	9.289	12 50 5.6	- 48.89	15 50.33	65.15	3 31.76	0.565		
Thur.	20	9 56 58.95	9.270	12 30 25.9	49.40	15 50.51	65.08	3 17.96	0.584		
Frid.	21	10 0 41.21	9.251	12 10 34.4	49.89	15 50.70	65.01	3 3.70	0.603		
Sat.	22	10 4 23.01	9.232	11 50 31.2	- 50.37	15 50.89	64.94	2 48.99	0.622		
SUN.	23	10 8 4.37	9.214	11 30 16.7	50.83	15 51.09	64.87	2 33.84	0.640		
Mon.	24	10 11 45.31	9.196	11 9 51.2	51.28	15 51.29	64.81	2 18.26	0.658		
Tues.	25	10 15 25.84	9.179	10 49 14.9	- 51.72	15 51.50	64.74	2 2.26	0.675		
Wed.	26	10 19 5.93	9.163	10 28 28.3	52.14	15 51.71	64.68	1 45.86	0.692		
Thur.	27	10 22 45.65	9.147	10 7 31.7	52.55	15 51.93	64.62	1 29.07	0.708		
Frid.	28	10 26 24.99	9.131	9 46 25.5	- 52.95	15 52.15	64.57	1 11.90	0.724		
Sat.	29	10 30 3.94	9.116	9 25 9.9	53.33	15 52.37	64.52	0 54.36	0.739		
SUN.	30	10 33 42.54	9.101	9 3 45.3	53.70	15 52.60	64.47	0 36.45	0.754		
Mon.	31	10 37 20.79	9.087	8 42 12.1	54.05	15 52.82	64.42	0 18.20	0.768		
Tues.	32	10 40 58.72	9.074	N. 8 20 30.5	- 54.40	15 53.05	64.38	0 0.37	0.781		

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.18 from the sidereal time. The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from		Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Added to Mean Time.	Diff. for 1 Hour.	
		h m s	s	° ' "	"	m s	s	h m s
Sat.	1	8 44 54.65	9.716	N. 18 4 10.2	-37.66	6 8.74	0.141	8 38 45.91
SUN.	2	8 48 47.53	9.690	17 48 57.6	38.39	6 5.07	0.166	8 42 42.46
Mon.	3	8 52 39.79	9.664	17 33 27.6	39.10	6 0.77	0.192	8 46 39.02
Tues.	4	8 56 31.43	9.638	17 17 40.5	-39.80	5 55.86	0.218	8 50 35.57
Wed.	5	9 0 22.45	9.613	17 1 36.6	40.49	5 50.32	0.244	8 54 32.13
Thur.	6	9 4 12.85	9.587	16 45 16.2	41.17	5 44.17	0.270	8 58 28.68
Frid.	7	9 8 2.64	9.562	16 28 39.7	-41.84	5 37.40	0.295	9 2 25.24
Sat.	8	9 11 51.82	9.537	16 11 47.3	42.50	5 30.03	0.320	9 6 21.79
SUN.	9	9 15 40.40	9.512	15 54 39.4	43.15	5 22.05	0.345	9 10 18.35
Mon.	10	9 19 28.39	9.487	15 37 16.1	-43.78	5 13.49	0.369	9 14 14.90
Tues.	11	9 23 15.80	9.463	15 19 37.9	44.40	5 4.34	0.393	9 18 11.46
Wed.	12	9 27 2.64	9.440	15 1 45.0	45.00	4 54.62	0.416	9 22 8.02
Thur.	13	9 30 48.92	9.417	14 43 37.8	-45.59	4 44.35	0.439	9 26 4.57
Frid.	14	9 34 34.66	9.395	14 25 16.4	46.18	4 33.54	0.462	9 30 1.12
Sat.	15	9 38 19.87	9.373	14 6 41.2	46.75	4 22.19	0.484	9 33 57.68
SUN.	16	9 42 4.57	9.352	13 47 52.5	-47.30	4 10.34	0.505	9 37 54.23
Mon.	17	9 45 48.76	9.331	13 28 50.6	47.85	3 57.98	0.525	9 41 50.79
Tues.	18	9 49 32.47	9.311	13 9 35.8	48.38	3 45.13	0.545	9 45 47.34
Wed.	19	9 53 15.69	9.291	12 50 8.4	-48.90	3 31.79	0.565	9 49 43.90
Thur.	20	9 56 58.44	9.272	12 30 28.6	49.41	3 17.99	0.584	9 53 40.45
Frid.	21	10 0 40.74	9.253	12 10 36.9	49.90	3 3.74	0.603	9 57 37.00
Sat.	22	10 4 22.58	9.234	11 50 33.5	-50.38	2 49.02	0.622	10 1 33.56
SUN.	23	10 8 3.98	9.216	11 30 18.8	50.84	2 33.87	0.640	10 5 30.11
Mon.	24	10 11 44.96	9.198	11 9 53.1	51.29	2 18.29	0.658	10 9 26.67
Tues.	25	10 15 25.51	9.181	10 49 16.6	-51.73	2 2.29	0.675	10 13 23.22
Wed.	26	10 19 5.66	9.165	10 28 29.8	52.15	1 45.88	0.692	10 17 19.78
Thur.	27	10 22 45.42	9.149	10 7 33.0	52.56	1 29.09	0.708	10 21 16.33
Frid.	28	10 26 24.80	9.134	9 46 26.6	-52.96	1 11.92	0.724	10 25 12.88
Sat.	29	10 30 3.80	9.119	9 25 10.7	53.34	0 54.36	0.739	10 29 9.44
SUN.	30	10 33 42.45	9.104	9 3 45.8	53.71	0 36.46	0.754	10 33 5.99
Mon.	31	10 37 20.75	9.090	8 42 12.3	54.06	0 18.21	0.768	10 37 2.54
Tues.	32	10 40 58.72	9.076	N. 8 20 30.5	-54.41	0 0.38	0.781	10 40 59.10

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.

The sign - prefixed to the hourly change of declination indicates that north declinations are decreasing.

Diff. for 1 Hour,
+ 9^h 8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	214	128 48 5.7	47 52.5	143.58	+ 0.76	0.006 3919	- 24.6	h m s 15 18 43.17
2	215	129 45 32.0	45 18.7	143.61	0.76	0.006 3319	25.5	15 14 47.26
3	216	130 42 59.1	42 45.6	143.64	0.73	0.006 2697	26.3	15 10 51.35
4	217	131 40 26.8	40 13.2	143.67	+ 0.68	0.006 2055	- 27.1	15 6 55.44
5	218	132 37 55.3	37 41.6	143.70	0.59	0.006 1395	27.9	15 2 59.53
6	219	133 35 24.5	35 10.7	143.73	0.49	0.006 0716	28.6	14 59 3.62
7	220	134 32 54.5	32 40.5	143.76	+ 0.37	0.006 0022	- 29.3	14 55 7.71
8	221	135 30 25.2	30 11.1	143.79	0.24	0.005 9312	29.8	14 51 11.80
9	222	136 27 56.8	27 42.6	143.83	+ 0.10	0.005 8590	30.3	14 47 15.90
10	223	137 25 29.4	25 15.0	143.87	- 0.04	0.005 7856	- 30.8	14 43 19.99
11	224	138 23 3.0	22 48.4	143.92	0.18	0.005 7111	31.2	14 39 24.08
12	225	139 20 37.7	20 23.0	143.98	0.29	0.005 6356	31.6	14 35 28.17
13	226	140 18 13.6	17 58.8	144.04	- 0.36	0.005 5592	- 32.0	14 31 32.26
14	227	141 15 50.9	15 36.0	144.09	0.41	0.005 4818	32.4	14 27 36.35
15	228	142 13 29.6	13 14.6	144.15	0.43	0.005 4034	32.9	14 23 40.44
16	229	143 11 9.9	10 54.7	144.21	- 0.41	0.005 3239	- 33.4	14 19 44.53
17	230	144 8 51.7	8 36.4	144.28	0.37	0.005 2431	33.9	14 15 48.62
18	231	145 6 35.2	6 19.8	144.35	0.29	0.005 1610	34.5	14 11 52.72
19	232	146 4 20.3	4 4.8	144.42	- 0.20	0.005 0774	- 35.1	14 7 56.81
20	233	147 2 7.1	1 51.4	144.49	- 0.10	0.004 9922	35.8	14 4 0.90
21	234	147 59 55.6	59 39.8	144.55	+ 0.03	0.004 9054	36.5	14 0 4.99
22	235	148 57 45.7	57 29.8	144.62	+ 0.16	0.004 8169	- 37.2	13 56 9.08
23	236	149 55 37.5	55 21.5	144.69	0.28	0.004 7266	38.0	13 52 13.17
24	237	150 53 30.9	53 14.8	144.76	0.40	0.004 6344	38.8	13 48 17.27
25	238	151 51 26.0	51 9.7	144.83	+ 0.50	0.004 5404	- 39.6	13 44 21.36
26	239	152 49 22.7	49 6.3	144.89	0.58	0.004 4446	40.4	13 40 25.45
27	240	153 47 20.9	47 4.4	144.96	0.63	0.004 3469	41.2	13 36 29.54
28	241	154 45 20.7	45 4.1	145.03	+ 0.68	0.004 2474	- 41.9	13 32 33.64
29	242	155 43 22.0	43 5.3	145.09	0.68	0.004 1461	42.6	13 28 37.73
30	243	156 41 24.8	41 8.0	145.15	0.66	0.004 0431	43.3	13 24 41.82
31	244	157 39 29.1	39 12.2	145.21	0.62	0.003 9384	43.9	13 20 45.91
32	245	158 37 34.8	37 17.8	145.27	+ 0.55	0.003 8322	- 44.6	13 16 50.00
NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.								Diff. for 1 Hour, — 9 ^s .8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' " "	' " "	' " "	" "	' " "	" "	h m	m	d
1	14 48.6	14 51.1	54 15.3	+ 0.69	54 24.5	+ 0.85	3 14.8	1.72	4.2
2	14 54.2	14 57.8	54 35.8	1.03	54 49.1	1.21	3 56.1	1.72	5.2
3	15 2.0	15 6.9	55 4.7	1.38	55 22.4	1.56	4 38.0	1.77	6.2
4	15 12.3	15 18.2	55 42.2	+ 1.74	56 4.1	+ 1.90	5 21.3	1.85	7.2
5	15 24.7	15 31.7	56 27.9	2.06	56 53.4	2.19	6 7.3	1.98	8.2
6	15 39.0	15 46.6	57 20.3	2.29	57 48.4	2.36	6 56.9	2.15	9.2
7	15 54.5	16 2.3	58 17.1	+ 2.40	58 45.9	+ 2.39	7 50.8	2.34	10.2
8	16 10.0	16 17.5	59 14.3	2.36	59 41.6	2.20	8 49.3	2.52	11.2
9	16 24.5	16 30.7	60 7.0	2.01	60 30.0	1.78	9 51.3	2.64	12.2
10	16 36.0	16 40.3	60 49.6	+ 1.48	61 5.4	+ 1.13	10 54.8	2.65	13.2
11	16 43.4	16 45.2	61 16.8	+ 0.75	61 23.3	+ 0.34	11 57.4	2.56	14.2
12	16 45.6	16 44.6	61 24.8	- 0.08	61 21.3	- 0.50	12 57.3	2.42	15.2
13	16 42.3	16 38.8	61 12.8	- 0.90	60 59.7	- 1.26	13 53.7	2.28	16.2
14	16 34.1	16 28.4	60 42.5	1.58	60 21.7	1.85	14 46.9	2.16	17.2
15	16 22.0	16 15.0	59 58.2	2.05	59 32.5	2.20	15 37.8	2.09	18.2
16	16 7.6	16 0.0	59 5.4	- 2.29	58 37.5	- 2.33	16 27.3	2.04	19.2
17	15 52.4	15 44.9	58 9.5	2.32	57 41.8	2.27	17 16.4	2.04	20.2
18	15 37.5	15 30.5	57 14.9	2.19	56 49.3	2.08	18 5.7	2.06	21.2
19	15 23.9	15 17.8	56 25.0	- 1.95	56 2.5	- 1.80	18 55.7	2.10	22.2
20	15 12.2	15 7.0	55 41.8	1.65	55 23.0	1.49	19 46.2	2.11	23.2
21	15 2.4	14 58.4	55 6.1	1.32	54 51.2	1.16	20 36.8	2.11	24.2
22	14 54.8	14 51.8	54 38.2	- 1.00	54 27.1	- 0.85	21 27.0	2.06	25.2
23	14 49.3	14 47.2	54 17.9	0.70	54 10.3	0.56	22 15.9	2.00	26.2
24	14 45.6	14 44.4	54 4.4	0.43	54 0.0	0.30	23 3.1	1.93	27.2
25	14 43.6	14 43.2	53 57.2	- 0.18	53 55.8	- 0.06	23 48.3	1.85	28.2
26	14 43.2	14 43.6	53 55.7	+ 0.05	53 57.0	+ 0.16	0	..	29.2
27	14 44.3	14 45.4	53 59.6	0.28	54 3.6	0.39	0 31.8	1.78	0.5
28	14 46.8	14 48.7	54 8.9	+ 0.50	54 15.6	+ 0.61	1 13.9	1.73	1.5
29	14 51.0	14 53.5	54 23.7	0.73	54 33.2	0.86	1 55.4	1.72	2.5
30	14 56.5	14 59.9	54 44.3	0.99	54 56.9	1.12	2 36.8	1.74	3.5
31	15 3.8	15 8.1	55 11.1	1.26	55 27.0	1.39	3 19.2	1.80	4.5
32	15 12.9	15 18.1	55 44.6	+ 1.53	56 3.8	+ 1.67	4 3.5	1.89	5.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 1.					MONDAY 3.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	11 48 6.46	1.8444	N. 6 51 14.6	11.440	0	13 16 42.59	1.8710	S. 2 41 3.7	12.155
1	11 49 57.10	1.8436	6 39 47.3	11.470	1	13 18 34.91	1.8731	2 53 13.0	12.154
2	11 51 47.69	1.8428	6 28 18.2	11.499	2	13 20 27.36	1.8752	3 5 22.2	12.152
3	11 53 38.23	1.8421	6 16 47.4	11.527	3	13 22 19.94	1.8774	3 17 31.2	12.149
4	11 55 28.74	1.8414	6 5 14.9	11.556	4	13 24 12.65	1.8797	3 29 40.1	12.147
5	11 57 19.20	1.8407	5 53 40.7	11.583	5	13 26 5.51	1.8822	3 41 48.8	12.142
6	11 59 9.63	1.8402	5 42 4.9	11.611	6	13 27 58.51	1.8846	3 53 57.1	12.136
7	12 1 0.03	1.8397	5 30 27.4	11.637	7	13 29 51.66	1.8872	4 6 5.1	12.130
8	12 2 50.40	1.8392	5 18 48.4	11.662	8	13 31 44.97	1.8897	4 18 12.7	12.123
9	12 4 40.74	1.8388	5 7 7.9	11.687	9	13 33 38.43	1.8924	4 30 19.9	12.116
10	12 6 31.06	1.8386	4 55 25.9	11.712	10	13 35 32.06	1.8952	4 42 26.6	12.107
11	12 8 21.37	1.8383	4 43 42.5	11.735	11	13 37 25.85	1.8979	4 54 32.8	12.099
12	12 10 11.66	1.8381	4 31 57.7	11.758	12	13 39 19.81	1.9007	5 6 38.5	12.090
13	12 12 1.94	1.8379	4 20 11.5	11.781	13	13 41 13.94	1.9037	5 18 43.6	12.079
14	12 13 52.21	1.8377	4 8 24.0	11.802	14	13 43 8.25	1.9067	5 30 48.0	12.067
15	12 15 42.47	1.8377	3 56 35.2	11.823	15	13 45 2.75	1.9098	5 42 51.7	12.055
16	12 17 32.73	1.8377	3 44 45.2	11.844	16	13 46 57.43	1.9129	5 54 54.6	12.042
17	12 19 23.00	1.8378	3 32 53.9	11.864	17	13 48 52.30	1.9162	6 6 56.8	12.029
18	12 21 13.27	1.8379	3 21 1.5	11.883	18	13 50 47.37	1.9194	6 18 58.1	12.015
19	12 23 3.55	1.8382	3 9 7.9	11.902	19	13 52 42.63	1.9227	6 30 58.6	12.000
20	12 24 53.85	1.8384	2 57 13.3	11.919	20	13 54 38.10	1.9262	6 42 58.1	11.983
21	12 26 44.16	1.8387	2 45 17.6	11.937	21	13 56 33.77	1.9297	6 54 56.6	11.966
22	12 28 34.49	1.8391	2 33 20.8	11.954	22	13 58 29.66	1.9332	7 6 54.0	11.948
23	12 30 24.85	1.8395	N. 2 21 23.1	11.970	23	14 0 25.76	1.9368	S. 7 18 50.4	11.930
SUNDAY 2.					TUESDAY 4.				
0	12 32 15.23	1.8399	N. 2 9 24.4	11.986	0	14 2 22.08	1.9406	S. 7 30 45.6	11.910
1	12 34 5.64	1.8405	1 57 24.8	12.000	1	14 4 18.63	1.9443	7 42 39.6	11.890
2	12 35 56.09	1.8412	1 45 24.4	12.014	2	14 6 15.40	1.9482	7 54 32.4	11.869
3	12 37 46.58	1.8418	1 33 23.1	12.027	3	14 8 12.41	1.9521	8 6 23.9	11.847
4	12 39 37.11	1.8426	1 21 21.1	12.040	4	14 10 9.65	1.9561	8 18 14.1	11.824
5	12 41 27.69	1.8434	1 9 18.3	12.052	5	14 12 7.14	1.9602	8 30 2.8	11.800
6	12 43 18.32	1.8442	0 57 14.8	12.064	6	14 14 4.87	1.9642	8 41 50.1	11.776
7	12 45 9.00	1.8452	0 45 10.6	12.075	7	14 16 2.85	1.9684	8 53 35.9	11.750
8	12 46 59.74	1.8462	0 33 5.8	12.085	8	14 18 1.08	1.9727	9 5 20.1	11.723
9	12 48 50.54	1.8472	0 21 0.4	12.094	9	14 19 59.57	1.9770	9 17 2.7	11.697
10	12 50 41.40	1.8483	N. 0 8 54.5	12.103	10	14 21 58.32	1.9814	9 28 43.7	11.668
11	12 52 32.34	1.8496	S. 0 3 12.0	12.112	11	14 23 57.34	1.9859	9 40 22.9	11.638
12	12 54 23.35	1.8508	0 15 18.9	12.118	12	14 25 56.63	1.9904	9 52 0.3	11.608
13	12 56 14.43	1.8521	0 27 26.2	12.126	13	14 27 56.19	1.9950	10 3 35.9	11.577
14	12 58 5.60	1.8535	0 39 34.0	12.132	14	14 29 56.03	1.9997	10 15 9.6	11.545
15	12 59 56.85	1.8549	0 51 42.1	12.137	15	14 31 56.15	2.0044	10 26 41.3	11.512
16	13 1 48.19	1.8565	1 3 50.5	12.142	16	14 33 56.56	2.0092	10 38 11.0	11.477
17	13 3 39.63	1.8581	1 15 59.1	12.146	17	14 35 57.25	2.0140	10 49 38.6	11.442
18	13 5 31.16	1.8597	1 28 8.0	12.150	18	14 37 58.24	2.0190	11 1 4.0	11.406
19	13 7 22.79	1.8613	1 40 17.1	12.152	19	14 39 59.53	2.0240	11 12 27.3	11.369
20	13 9 14.52	1.8631	1 52 26.3	12.154	20	14 42 1.12	2.0291	11 23 48.3	11.331
21	13 11 6.36	1.8650	2 4 35.6	12.156	21	14 44 3.02	2.0342	11 35 7.0	11.292
22	13 12 58.32	1.8669	2 16 45.0	12.157	22	14 46 5.23	2.0394	11 46 23.3	11.251
23	13 14 50.39	1.8689	2 28 54.4	12.156	23	14 48 7.75	2.0447	11 57 37.1	11.209
24	13 16 42.59	1.8710	S. 2 41 3.7	12.155	24	14 50 10.59	2.0500	S. 12 8 48.4	11.167

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 5.					FRIDAY 7.				
0	h m s	s	S. 12 8 48.4	11.167	0	h m s	s	S. 19 53 6.8	7.672
1	14 50 10.59	2.0500	12 19 57.1	11.123	1	16 35 45.26	2.3644	20 0 43.9	7.564
2	14 52 13.75	2.0554	12 31 3.2	11.079	2	16 38 7.34	2.3717	20 8 14.5	7.456
3	14 54 17.24	2.0609	12 42 6.6	11.033	3	16 40 29.86	2.3789	20 15 38.6	7.346
4	14 56 21.06	2.0664	12 53 7.2	10.986	4	16 42 52.81	2.3861	20 22 56.0	7.234
5	15 0 29.69	2.0719	13 4 4.9	10.937	5	16 45 16.19	2.3932	20 30 6.7	7.121
6	15 2 34.52	2.0776	13 14 59.7	10.889	6	16 47 40.00	2.4004	20 37 10.5	7.007
7	15 4 39.69	2.0833	13 25 51.6	10.839	7	16 50 4.24	2.4076	20 44 7.5	6.892
8	15 6 45.21	2.0891	13 36 40.4	10.787	8	16 52 28.91	2.4147	20 50 57.5	6.774
9	15 8 51.08	2.0949	13 47 26.1	10.735	9	16 54 54.00	2.4217	20 57 40.4	6.655
10	15 10 57.31	2.1008	13 58 8.6	10.682	10	16 57 19.52	2.4289	21 4 16.1	6.534
11	15 13 3.89	2.1067	14 8 47.9	10.627	11	16 59 45.47	2.4360	21 10 44.5	6.412
12	15 15 10.84	2.1127	14 19 23.9	10.571	12	17 2 11.84	2.4430	21 17 5.6	6.290
13	15 17 18.15	2.1188	14 29 56.4	10.513	13	17 4 38.63	2.4500	21 23 19.3	6.165
14	15 19 25.83	2.1249	14 40 25.5	10.455	14	17 7 5.84	2.4570	21 29 25.4	6.038
15	15 21 33.88	2.1311	14 50 51.0	10.395	15	17 9 33.47	2.4639	21 35 23.9	5.910
16	15 23 42.31	2.1373	15 1 12.9	10.334	16	17 12 1.51	2.4707	21 41 14.6	5.781
17	15 25 51.11	2.1436	15 11 31.1	10.272	17	17 14 29.96	2.4776	21 46 57.6	5.651
18	15 28 0.30	2.1499	15 21 45.5	10.208	18	17 16 58.82	2.4844	21 52 32.7	5.518
19	15 30 9.87	2.1563	15 31 56.1	10.143	19	17 19 28.09	2.4912	21 57 59.8	5.384
20	15 32 19.82	2.1627	15 42 2.7	10.077	20	17 21 57.76	2.4978	22 3 18.8	5.249
21	15 34 30.17	2.1692	15 52 5.3	10.010	21	17 24 27.83	2.5044	22 8 29.7	5.113
22	15 36 40.91	2.1757	16 2 3.9	9.942	22	17 26 58.29	2.5110	22 13 32.4	4.976
23	15 38 52.05	2.1823	16 11 58.3	9.872	23	17 29 29.15	2.5175	22 18 26.8	4.837
THURSDAY 6.					SATURDAY 8.				
0	15 41 3.58	2.1889	S. 16 11 58.3	9.801	0	17 32 0.39	2.5239	S. 22 18 26.8	4.696
1	15 43 15.51	2.1955	16 21 48.5	9.727	1	17 34 32.02	2.5303	22 23 12.8	4.554
2	15 45 27.85	2.2022	16 31 34.4	9.653	2	17 37 4.03	2.5367	22 27 50.3	4.411
3	15 47 40.60	2.2091	16 41 15.8	9.578	3	17 39 36.42	2.5429	22 32 19.3	4.266
4	15 49 53.75	2.2158	16 50 52.8	9.502	4	17 42 9.18	2.5490	22 36 39.6	4.120
5	15 52 7.32	2.2227	17 0 25.2	9.423	5	17 44 42.30	2.5551	22 40 51.2	3.972
6	15 54 21.29	2.2295	17 9 53.0	9.343	6	17 47 15.79	2.5611	22 44 54.0	3.824
7	15 56 35.68	2.2363	17 19 16.0	9.263	7	17 49 49.63	2.5670	22 48 47.9	3.674
8	15 58 50.49	2.2433	17 28 34.2	9.182	8	17 52 23.83	2.5728	22 52 32.9	3.523
9	16 1 5.72	2.2503	17 37 47.6	9.098	9	17 54 58.37	2.5785	22 56 8.8	3.371
10	16 3 21.36	2.2572	17 46 56.0	9.013	10	17 57 33.25	2.5842	22 59 35.6	3.218
11	16 5 37.43	2.2642	17 55 59.3	8.927	11	18 0 8.47	2.5897	23 2 53.3	3.063
12	16 7 53.92	2.2713	18 4 57.5	8.839	12	18 2 44.01	2.5951	23 6 1.8	2.907
13	16 10 10.83	2.2783	18 13 50.5	8.749	13	18 5 19.88	2.6005	23 9 0.9	2.750
14	16 12 28.18	2.2855	18 22 38.2	8.658	14	18 7 56.07	2.6057	23 11 50.6	2.592
15	16 14 45.95	2.2927	18 31 50.4	8.567	15	18 10 32.56	2.6107	23 14 30.9	2.433
16	16 17 4.15	2.2997	18 39 27.2	8.472	16	18 13 9.36	2.6157	23 17 1.7	2.272
17	16 19 22.77	2.3068	18 48 28.4	8.377	17	18 15 46.45	2.6206	23 19 22.9	2.111
18	16 21 41.83	2.3140	18 56 53.9	8.282	18	18 18 23.83	2.6254	23 21 34.4	1.948
19	16 24 1.32	2.3212	19 5 13.7	8.183	19	18 21 1.50	2.6301	23 23 36.2	1.785
20	16 26 21.24	2.3284	19 13 27.7	8.083	20	18 23 39.44	2.6345	23 25 28.2	1.622
21	16 28 41.60	2.3357	19 21 35.7	7.982	21	18 26 17.64	2.6389	23 27 10.4	1.457
22	16 31 2.39	2.3429	19 29 37.7	7.880	22	18 28 56.11	2.6432	23 28 42.8	1.290
23	16 33 23.61	2.3501	19 37 33.6	7.777	23	18 31 34.83	2.6473	23 30 5.2	1.123
24	16 35 45.26	2.3572	19 45 23.3	7.672	24	18 34 13.79	2.6513	23 31 17.6	0.956
		2.3644	S. 19 53 6.8	7.672			2.6552	S. 23 32 20.0	0.792

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 9.					TUESDAY 11.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	18 36 52.99	2.6552	S. 23 32 20.0	0.956	0	20 45 58.33	2.6659	S. 20 58 49.2	7.280
1	18 39 32.42	2.6590	23 33 12.3	0.787	1	20 48 38.19	2.6627	20 51 27.6	7.439
2	18 42 12.07	2.6626	23 33 54.5	0.618	2	20 51 17.85	2.6593	20 43 56.5	7.596
3	18 44 51.93	2.6660	23 34 26.5	0.448	3	20 53 57.31	2.6559	20 36 16.1	7.751
4	18 47 31.99	2.6693	23 34 48.3	0.278	4	20 56 36.56	2.6523	20 28 26.4	7.906
5	18 50 12.25	2.6725	23 34 59.9	-0.107	5	20 59 15.59	2.6486	20 20 27.4	8.060
6	18 52 52.69	2.6755	23 35 1.1	+0.066	6	21 1 54.39	2.6448	20 12 19.2	8.212
7	18 55 33.31	2.6784	23 34 52.0	0.238	7	21 4 32.97	2.6410	20 4 2.0	8.362
8	18 58 14.10	2.6812	23 34 32.5	0.411	8	21 7 11.31	2.6370	19 55 35.8	8.511
9	19 0 55.05	2.6837	23 34 2.7	0.584	9	21 9 49.41	2.6330	19 47 0.7	8.658
10	19 3 36.15	2.6862	23 33 22.4	0.758	10	21 12 27.27	2.6288	19 38 16.8	8.805
11	19 6 17.39	2.6885	23 32 31.7	0.932	11	21 15 4.87	2.6245	19 29 24.1	8.950
12	19 8 58.77	2.6907	23 31 30.6	1.107	12	21 17 42.21	2.6202	19 20 22.8	9.093
13	19 11 40.27	2.6926	23 30 18.9	1.282	13	21 20 19.29	2.6157	19 11 12.9	9.235
14	19 14 21.88	2.6944	23 28 56.8	1.457	14	21 22 56.10	2.6112	19 1 54.6	9.374
15	19 17 3.60	2.6961	23 27 24.1	1.632	15	21 25 32.64	2.6067	18 52 28.0	9.512
16	19 19 45.41	2.6976	23 25 40.9	1.807	16	21 28 8.91	2.6022	18 42 53.1	9.650
17	19 22 27.31	2.6989	23 23 47.2	1.983	17	21 30 44.90	2.5974	18 33 10.0	9.785
18	19 25 9.28	2.7001	23 21 42.9	2.160	18	21 33 20.60	2.5926	18 23 18.9	9.918
19	19 27 51.32	2.7011	23 19 28.0	2.337	19	21 35 56.01	2.5877	18 13 19.8	10.050
20	19 30 33.41	2.7020	23 17 2.5	2.512	20	21 38 31.13	2.5828	18 3 12.9	10.180
21	19 33 15.56	2.7027	23 14 26.5	2.688	21	21 41 5.95	2.5779	17 52 58.2	10.309
22	19 35 57.74	2.7033	23 11 39.9	2.864	22	21 43 40.48	2.5729	17 42 35.8	10.436
23	19 38 39.96	2.7037	S. 23 8 42.8	3.040	23	21 46 14.70	2.5678	S. 17 32 5.9	10.560
MONDAY 10.					WEDNESDAY 12.				
0	19 41 22.19	2.7039	S. 23 5 35.1	3.216	0	21 48 48.62	2.5627	S. 17 21 28.6	10.682
1	19 44 4.43	2.7041	23 2 16.9	3.392	1	21 51 22.23	2.5576	17 10 44.0	10.804
2	19 46 46.68	2.7041	22 58 48.1	3.567	2	21 53 55.53	2.5524	16 59 52.1	10.924
3	19 49 28.92	2.7038	22 55 8.8	3.742	3	21 56 28.52	2.5472	16 48 53.1	11.042
4	19 52 11.14	2.7035	22 51 19.0	3.917	4	21 59 1.19	2.5418	16 37 47.1	11.157
5	19 54 53.34	2.7030	22 47 18.8	4.091	5	22 1 33.54	2.5366	16 26 34.3	11.270
6	19 57 35.50	2.7022	22 43 8.1	4.266	6	22 4 5.58	2.5312	16 15 14.7	11.382
7	20 0 17.61	2.7014	22 38 46.9	4.439	7	22 6 37.29	2.5258	16 3 48.4	11.492
8	20 2 59.67	2.7005	22 34 15.4	4.612	8	22 9 8.68	2.5205	15 52 15.6	11.601
9	20 5 41.67	2.6993	22 29 33.5	4.784	9	22 11 39.75	2.5151	15 40 36.3	11.707
10	20 8 23.59	2.6981	22 24 41.3	4.957	10	22 14 10.49	2.5097	15 28 50.7	11.812
11	20 11 5.44	2.6967	22 19 38.7	5.128	11	22 16 40.91	2.5042	15 16 58.9	11.913
12	20 13 47.20	2.6952	22 14 25.9	5.298	12	22 19 11.00	2.4987	15 5 1.1	12.013
13	20 16 28.86	2.6934	22 9 2.9	5.468	13	22 21 40.76	2.4932	14 52 57.3	12.112
14	20 19 10.41	2.6916	22 3 29.7	5.638	14	22 24 10.19	2.4878	14 40 47.7	12.208
15	20 21 51.85	2.6897	21 57 46.3	5.807	15	22 26 39.30	2.4823	14 28 32.3	12.303
16	20 24 33.17	2.6875	21 51 52.9	5.974	16	22 29 8.07	2.4768	14 16 11.3	12.396
17	20 27 14.35	2.6852	21 45 49.4	6.141	17	22 31 36.52	2.4714	14 3 44.8	12.486
18	20 29 55.40	2.6829	21 39 36.0	6.307	18	22 34 4.64	2.4658	13 51 13.0	12.574
19	20 32 36.30	2.6803	21 33 12.6	6.472	19	22 36 32.42	2.4603	13 38 35.9	12.661
20	20 35 17.04	2.6777	21 26 39.4	6.635	20	22 38 59.88	2.4549	13 25 53.7	12.746
21	20 37 57.62	2.6750	21 19 56.4	6.798	21	22 41 27.01	2.4494	13 13 6.4	12.828
22	20 40 38.04	2.6722	21 13 3.6	6.960	22	22 43 53.81	2.4439	13 0 14.3	12.908
23	20 43 18.28	2.6691	21 6 1.2	7.120	23	22 46 20.28	2.4385	12 47 17.4	12.987
24	20 45 58.33	2.6659	S. 20 58 49.2	7.280	24	22 48 46.43	2.4331	S. 12 34 15.8	13.064

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 13.					SATURDAY 15.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	22 48 46.43	2.4331	S. 12 34 15.8	13.064	0	0 39 57.93	2.2191	S. 1 15 21.1	14.532
1	22 51 12.25	2.4277	12 21 9.7	13.138	1	0 42 10.98	2.2160	1 0 49.5	14.521
2	22 53 37.75	2.4222	12 7 59.2	13.211	2	0 44 23.85	2.2130	0 46 18.6	14.508
3	22 56 2.92	2.4168	11 54 44.4	13.282	3	0 46 36.54	2.2100	0 31 48.5	14.494
4	22 58 27.77	2.4115	11 41 25.4	13.351	4	0 48 49.05	2.2071	0 17 19.3	14.478
5	23 0 52.30	2.4062	11 28 2.3	13.417	5	0 51 1.39	2.2043	S. 0 2 51.1	14.461
6	23 3 16.51	2.4009	11 14 35.3	13.482	6	0 53 13.57	2.2016	N. 0 11 36.0	14.442
7	23 5 40.41	2.3957	11 1 4.5	13.544	7	0 55 25.58	2.1988	0 26 2.0	14.423
8	23 8 3.99	2.3903	10 47 30.0	13.605	8	0 57 37.43	2.1962	0 40 26.8	14.402
9	23 10 27.25	2.3851	10 33 51.9	13.664	9	0 59 49.12	2.1936	0 54 50.2	14.379
10	23 12 50.20	2.3799	10 20 10.3	13.722	10	1 2 0.66	2.1912	1 9 12.3	14.356
11	23 15 12.84	2.3747	10 6 25.3	13.777	11	1 4 12.06	2.1887	1 23 32.9	14.330
12	23 17 35.17	2.3697	9 52 37.1	13.829	12	1 6 23.31	2.1863	1 37 51.9	14.303
13	23 19 57.20	2.3646	9 38 45.8	13.880	13	1 8 34.42	2.1841	1 52 9.3	14.275
14	23 22 18.92	2.3595	9 24 51.5	13.929	14	1 10 45.40	2.1818	2 6 24.9	14.245
15	23 24 40.34	2.3545	9 10 54.3	13.977	15	1 12 56.24	2.1796	2 20 38.7	14.215
16	23 27 1.46	2.3496	8 56 54.3	14.022	16	1 15 6.95	2.1775	2 34 50.7	14.183
17	23 29 22.29	2.3447	8 42 51.6	14.066	17	1 17 17.54	2.1754	2 49 0.7	14.150
18	23 31 42.83	2.3398	8 28 46.4	14.107	18	1 19 28.00	2.1731	3 3 8.7	14.115
19	23 34 3.07	2.3350	8 14 38.8	14.147	19	1 21 38.35	2.1715	3 17 14.5	14.079
20	23 36 23.03	2.3302	8 0 28.8	14.185	20	1 23 48.58	2.1697	3 31 18.2	14.043
21	23 38 42.70	2.3255	7 46 16.6	14.221	21	1 25 58.71	2.1679	3 45 19.7	14.005
22	23 41 2.09	2.3208	7 32 2.3	14.255	22	1 28 8.73	2.1661	3 59 18.8	13.965
23	23 43 21.20	2.3162	S. 7 17 46.0	14.287	23	1 30 18.64	2.1644	N. 4 13 15.5	13.924
FRIDAY 14.					SUNDAY 16.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	23 45 40.03	2.3116	S. 7 3 27.8	14.317	0	1 32 28.46	2.1629	N. 4 27 9.7	13.882
1	23 47 58.59	2.3071	6 49 7.9	14.346	1	1 34 38.19	2.1613	4 41 1.4	13.840
2	23 50 16.88	2.3026	6 34 46.3	14.373	2	1 36 47.82	2.1597	4 54 50.5	13.796
3	23 52 34.90	2.2982	6 20 23.1	14.398	3	1 38 57.36	2.1583	5 8 36.9	13.750
4	23 54 52.66	2.2938	6 5 58.5	14.421	4	1 41 6.82	2.1570	5 22 20.5	13.703
5	23 57 10.16	2.2895	5 51 32.6	14.442	5	1 43 16.20	2.1557	5 36 1.3	13.656
6	23 59 27.40	2.2852	5 37 5.4	14.462	6	1 45 25.50	2.1543	5 49 39.2	13.607
7	0 1 44.39	2.2811	5 22 37.1	14.480	7	1 47 34.72	2.1532	6 3 14.2	13.557
8	0 4 1.13	2.2769	5 8 7.8	14.497	8	1 49 43.88	2.1521	6 16 46.1	13.507
9	0 6 17.62	2.2728	4 53 37.5	14.511	9	1 51 52.97	2.1509	6 30 15.0	13.455
10	0 8 33.87	2.2688	4 39 6.5	14.523	10	1 54 1.99	2.1499	6 43 40.7	13.402
11	0 10 49.88	2.2649	4 24 34.7	14.535	11	1 56 10.96	2.1490	6 57 3.2	13.347
12	0 13 5.66	2.2610	4 10 2.3	14.544	12	1 58 19.87	2.1481	7 10 22.4	13.292
13	0 15 21.20	2.2572	3 55 29.4	14.552	13	2 0 28.73	2.1472	7 23 38.3	13.237
14	0 17 36.52	2.2534	3 40 56.1	14.558	14	2 2 37.54	2.1464	7 36 50.8	13.179
15	0 19 51.61	2.2497	3 26 22.4	14.562	15	2 4 46.30	2.1456	7 49 59.8	13.121
16	0 22 6.48	2.2460	3 11 48.6	14.565	16	2 6 55.01	2.1449	8 3 5.3	13.062
17	0 24 21.13	2.2424	2 57 14.6	14.567	17	2 9 3.69	2.1443	8 16 7.2	13.001
18	0 26 35.57	2.2389	2 42 40.5	14.567	18	2 11 12.33	2.1437	8 29 5.4	12.940
19	0 28 49.80	2.2354	2 28 6.6	14.564	19	2 13 20.94	2.1432	8 42 0.0	12.878
20	0 31 3.82	2.2320	2 13 32.8	14.561	20	2 15 29.52	2.1427	8 54 50.8	12.815
21	0 33 17.64	2.2287	1 58 59.3	14.556	21	2 17 38.07	2.1422	9 7 37.8	12.751
22	0 35 31.26	2.2254	1 44 26.1	14.550	22	2 19 46.59	2.1418	9 20 20.9	12.685
23	0 37 44.69	2.2222	1 29 53.3	14.542	23	2 21 55.09	2.1416	9 33 0.0	12.619
24	0 39 57.93	2.2191	S. 1 15 21.1	14.532	24	2 24 3.58	2.1413	N. 9 45 35.2	12.552

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 17.					WEDNESDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	2 24 3.58	2.1413	N. 9 45 35.2	12.552	0	4 7 14.95	2.1689	N. 18 15 46.4	8.434
1	2 26 12.05	2.1411	9 58 6.3	12.485	1	4 9 25.12	2.1700	18 24 9.4	8.333
2	2 28 20.51	2.1408	10 10 33.4	12.417	2	4 11 35.35	2.1710	18 32 26.4	8.232
3	2 30 28.95	2.1407	10 22 56.4	12.347	3	4 13 45.64	2.1721	18 40 37.2	8.128
4	2 32 37.39	2.1407	10 35 15.1	12.276	4	4 15 56.00	2.1732	18 48 41.8	8.025
5	2 34 45.83	2.1406	10 47 29.5	12.205	5	4 18 6.42	2.1742	18 56 40.2	7.922
6	2 36 54.26	2.1406	10 59 39.7	12.133	6	4 20 16.90	2.1752	19 4 32.4	7.817
7	2 39 2.70	2.1407	11 11 45.5	12.060	7	4 22 27.45	2.1763	19 12 18.3	7.713
8	2 41 11.14	2.1407	11 23 46.9	11.987	8	4 24 38.06	2.1774	19 19 58.0	7.609
9	2 43 19.58	2.1407	11 35 43.9	11.912	9	4 26 48.74	2.1785	19 27 31.4	7.503
10	2 45 28.03	2.1409	11 47 36.3	11.835	10	4 28 59.48	2.1795	19 34 58.4	7.397
11	2 47 36.49	2.1412	11 59 24.1	11.759	11	4 31 10.28	2.1805	19 42 19.0	7.291
12	2 49 44.97	2.1414	12 11 7.4	11.682	12	4 33 21.14	2.1816	19 49 33.3	7.185
13	2 51 53.46	2.1417	12 22 46.0	11.604	13	4 35 32.07	2.1826	19 56 41.2	7.077
14	2 54 1.97	2.1420	12 34 19.9	11.526	14	4 37 43.05	2.1836	20 3 42.6	6.969
15	2 56 10.50	2.1423	12 45 49.1	11.446	15	4 39 54.10	2.1846	20 10 37.5	6.861
16	2 58 19.05	2.1427	12 57 13.4	11.365	16	4 42 5.20	2.1856	20 17 25.9	6.753
17	3 0 27.63	2.1432	13 8 32.9	11.284	17	4 44 16.37	2.1866	20 24 7.9	6.645
18	3 2 36.23	2.1437	13 19 47.5	11.202	18	4 46 27.59	2.1875	20 30 43.3	6.535
19	3 4 44.87	2.1442	13 30 57.2	11.120	19	4 48 38.87	2.1885	20 37 12.1	6.426
20	3 6 53.53	2.1447	13 42 1.9	11.037	20	4 50 50.21	2.1894	20 43 34.4	6.316
21	3 9 2.23	2.1452	13 53 1.6	10.952	21	4 53 1.60	2.1902	20 49 50.0	6.205
22	3 11 10.96	2.1457	14 3 56.2	10.867	22	4 55 13.04	2.1912	20 55 59.0	6.095
23	3 13 19.72	2.1464	N. 14 14 45.7	10.782	23	4 57 24.54	2.1921	N. 21 2 1.4	5.984
TUESDAY 18.					THURSDAY 20.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	3 15 28.53	2.1472	N. 14 25 30.1	10.697	0	4 59 36.09	2.1929	N. 21 7 57.1	5.872
1	3 17 37.38	2.1478	14 36 9.3	10.609	1	5 1 47.69	2.1937	21 13 46.1	5.761
2	3 19 46.27	2.1485	14 46 43.2	10.522	2	5 3 59.34	2.1946	21 19 28.4	5.649
3	3 21 55.20	2.1492	14 57 11.9	10.433	3	5 6 11.04	2.1953	21 25 4.0	5.537
4	3 24 4.17	2.1499	15 7 35.2	10.343	4	5 8 22.78	2.1961	21 30 32.9	5.425
5	3 26 13.19	2.1507	15 17 53.1	10.254	5	5 10 34.57	2.1968	21 35 55.0	5.312
6	3 28 22.26	2.1516	15 28 5.7	10.165	6	5 12 46.40	2.1976	21 41 10.3	5.198
7	3 30 31.38	2.1524	15 38 12.9	10.074	7	5 14 58.28	2.1983	21 46 18.8	5.085
8	3 32 40.55	2.1532	15 48 14.6	9.982	8	5 17 10.20	2.1989	21 51 20.5	4.971
9	3 34 49.77	2.1542	15 58 10.7	9.889	9	5 19 22.15	2.1995	21 56 15.3	4.857
10	3 36 59.05	2.1551	16 8 1.3	9.797	10	5 21 34.14	2.2002	22 1 3.4	4.744
11	3 39 8.38	2.1559	16 17 46.3	9.703	11	5 23 46.17	2.2007	22 5 44.6	4.629
12	3 41 17.76	2.1568	16 27 25.7	9.609	12	5 25 58.23	2.2012	22 10 18.9	4.514
13	3 43 27.20	2.1578	16 36 59.4	9.514	13	5 28 10.32	2.2017	22 14 46.3	4.400
14	3 45 36.70	2.1587	16 46 27.4	9.419	14	5 30 22.44	2.2022	22 19 6.9	4.285
15	3 47 46.25	2.1597	16 55 49.7	9.323	15	5 32 34.59	2.2027	22 23 20.5	4.169
16	3 49 55.86	2.1607	17 5 6.2	9.227	16	5 34 46.77	2.2031	22 27 27.2	4.054
17	3 52 5.53	2.1617	17 14 16.9	9.130	17	5 36 58.96	2.2034	22 31 27.0	3.938
18	3 54 15.27	2.1627	17 23 21.8	9.032	18	5 39 11.18	2.2038	22 35 19.8	3.822
19	3 56 25.06	2.1637	17 32 20.8	8.934	19	5 41 23.42	2.2042	22 39 5.6	3.706
20	3 58 34.91	2.1647	17 41 13.9	8.835	20	5 43 35.68	2.2044	22 42 44.5	3.591
21	4 0 44.83	2.1658	17 50 1.0	8.735	21	5 45 47.95	2.2046	22 46 16.5	3.474
22	4 2 54.81	2.1668	17 58 42.1	8.636	22	5 48 0.23	2.2048	22 49 41.4	3.357
23	4 5 4.85	2.1678	18 7 17.3	8.536	23	5 50 12.53	2.2050	22 52 59.4	3.241
24	4 7 14.95	2.1689	N. 18 15 46.4	8.434	24	5 52 24.83	2.2051	N. 22 56 10.3	3.123

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 21.					SUNDAY 23.				
0	5 52 24.83	2.2051	N. 22 56 10.3	3.123	0	7 37 33.03	2.1582	N. 23 12 6.7	2.405
1	5 54 37.14	2.2052	22 59 14.2	3.007	1	7 39 42.46	2.1561	23 9 39.1	2.515
2	5 56 49.45	2.2052	23 2 11.2	2.891	2	7 41 51.76	2.1539	23 7 4.9	2.624
3	5 59 1.76	2.2052	23 5 1.1	2.774	3	7 44 0.93	2.1518	23 4 24.2	2.732
4	6 1 14.07	2.2052	23 7 44.1	2.657	4	7 46 9.98	2.1497	23 1 37.0	2.841
5	6 3 26.38	2.2051	23 10 20.0	2.539	5	7 48 18.89	2.1474	22 58 43.3	2.949
6	6 5 38.68	2.2048	23 12 48.8	2.422	6	7 50 27.67	2.1452	22 55 43.1	3.057
7	6 7 50.96	2.2047	23 15 10.7	2.306	7	7 52 36.31	2.1428	22 52 36.4	3.164
8	6 10 3.24	2.2045	23 17 25.5	2.188	8	7 54 44.81	2.1406	22 49 23.4	3.271
9	6 12 15.50	2.2042	23 19 33.3	2.071	9	7 56 53.18	2.1382	22 46 3.9	3.377
10	6 14 27.75	2.2040	23 21 34.0	1.953	10	7 59 1.40	2.1357	22 42 38.1	3.483
11	6 16 39.98	2.2036	23 23 27.7	1.837	11	8 1 9.47	2.1333	22 39 5.9	3.589
12	6 18 52.18	2.2032	23 25 14.4	1.720	12	8 3 17.40	2.1309	22 35 27.4	3.694
13	6 21 4.36	2.2027	23 26 54.1	1.602	13	8 5 25.18	2.1284	22 31 42.6	3.798
14	6 23 16.51	2.2022	23 28 26.7	1.485	14	8 7 32.81	2.1259	22 27 51.6	3.902
15	6 25 28.63	2.2017	23 29 52.3	1.368	15	8 9 40.29	2.1233	22 23 54.4	4.005
16	6 27 40.71	2.2011	23 31 10.9	1.252	16	8 11 47.61	2.1207	22 19 51.0	4.108
17	6 29 52.76	2.2005	23 32 22.5	1.134	17	8 13 54.77	2.1181	22 15 41.4	4.212
18	6 32 4.77	2.1998	23 33 27.0	1.017	18	8 16 1.78	2.1155	22 11 25.6	4.313
19	6 34 16.74	2.1991	23 34 24.6	0.901	19	8 18 8.63	2.1128	22 7 3.8	4.414
20	6 36 28.66	2.1982	23 35 15.1	0.784	20	8 20 15.32	2.1101	22 2 35.9	4.516
21	6 38 40.53	2.1975	23 35 58.7	0.667	21	8 22 21.84	2.1073	21 58 1.9	4.617
22	6 40 52.36	2.1967	23 36 35.2	0.551	22	8 24 28.20	2.1047	21 53 21.9	4.717
23	6 43 4.13	2.1957	N. 23 37 4.8	0.435	23	8 26 34.40	2.1019	N. 21 48 35.9	4.816
SATURDAY 22.					MONDAY 24.				
0	6 45 15.84	2.1947	N. 23 37 27.4	0.318	0	8 28 40.43	2.0991	N. 21 43 44.0	4.915
1	6 47 27.50	2.1938	23 37 43.0	0.202	1	8 30 46.29	2.0962	21 38 46.1	5.013
2	6 49 39.10	2.1927	23 37 51.7	+0.087	2	8 32 51.98	2.0934	21 33 42.4	5.110
3	6 51 50.63	2.1916	23 37 53.4	-0.029	3	8 34 57.50	2.0906	21 28 32.9	5.207
4	6 54 2.09	2.1905	23 37 48.2	0.145	4	8 37 2.85	2.0877	21 23 17.5	5.305
5	6 56 13.49	2.1893	23 37 36.0	0.261	5	8 39 8.03	2.0848	21 17 56.3	5.401
6	6 58 24.81	2.1880	23 37 16.9	0.376	6	8 41 13.03	2.0818	21 12 29.4	5.496
7	7 0 36.05	2.1867	23 36 50.9	0.491	7	8 43 17.85	2.0789	21 6 56.8	5.590
8	7 2 47.22	2.1855	23 36 18.0	0.605	8	8 45 22.50	2.0760	21 1 18.6	5.684
9	7 4 58.31	2.1841	23 35 38.3	0.720	9	8 47 26.97	2.0731	20 55 34.7	5.778
10	7 7 9.31	2.1826	23 34 51.6	0.835	10	8 49 31.27	2.0702	20 49 45.2	5.872
11	7 9 20.22	2.1812	23 33 58.1	0.948	11	8 51 35.39	2.0671	20 43 50.1	5.964
12	7 11 31.05	2.1797	23 32 57.8	1.062	12	8 53 39.32	2.0641	20 37 49.5	6.056
13	7 13 41.79	2.1782	23 31 50.7	1.176	13	8 55 43.08	2.0611	20 31 43.4	6.147
14	7 15 52.43	2.1765	23 30 36.7	1.289	14	8 57 46.65	2.0581	20 25 31.9	6.237
15	7 18 2.97	2.1748	23 29 16.0	1.402	15	8 59 50.05	2.0551	20 19 14.9	6.327
16	7 20 13.41	2.1732	23 27 48.5	1.515	16	9 1 53.26	2.0520	20 12 52.6	6.417
17	7 22 23.75	2.1714	23 26 14.2	1.627	17	9 3 56.29	2.0489	20 6 24.9	6.506
18	7 24 33.98	2.1697	23 24 33.2	1.739	18	9 5 59.13	2.0459	19 59 51.9	6.594
19	7 26 44.11	2.1678	23 22 45.5	1.852	19	9 8 1.80	2.0429	19 53 13.6	6.682
20	7 28 54.12	2.1659	23 20 51.0	1.963	20	9 10 4.28	2.0398	19 46 30.1	6.768
21	7 31 4.02	2.1641	23 18 49.9	2.074	21	9 12 6.58	2.0367	19 39 41.4	6.854
22	7 33 13.81	2.1622	23 16 42.1	2.185	22	9 14 8.69	2.0337	19 32 47.6	6.939
23	7 35 23.48	2.1602	23 14 27.7	2.295	23	9 16 10.62	2.0306	19 25 48.7	7.024
24	7 37 33.03	2.1582	N. 23 12 6.7	2.405	24	9 18 12.36	2.0275	N. 19 18 44.7	7.108

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 25.					THURSDAY 27.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	9 18 12.36	2.0275	N. 19 18 44.7	7.108	0	10 52 9.44	1.8942	N. 12 13 28.5	10.343
1	9 20 13.92	2.0244	19 11 35.7	7.192	1	10 54 3.03	1.8921	12 3 6.4	10.393
2	9 22 15.29	2.0213	19 4 21.7	7.275	2	10 55 56.49	1.8900	11 52 41.3	10.442
3	9 24 16.48	2.0183	18 57 2.7	7.357	3	10 57 49.83	1.8879	11 42 13.3	10.491
4	9 26 17.49	2.0152	18 49 38.8	7.439	4	10 59 43.04	1.8858	11 31 42.4	10.539
5	9 28 18.31	2.0122	18 42 10.0	7.520	5	11 1 36.13	1.8838	11 21 8.6	10.587
6	9 30 18.95	2.0091	18 34 36.4	7.600	6	11 3 29.10	1.8818	11 10 32.0	10.633
7	9 32 19.40	2.0060	18 26 58.0	7.680	7	11 5 21.95	1.8799	10 59 52.6	10.679
8	9 34 19.67	2.0030	18 19 14.8	7.759	8	11 7 14.09	1.8780	10 49 10.5	10.724
9	9 36 19.76	1.9999	18 11 26.9	7.837	9	11 9 7.31	1.8761	10 38 25.7	10.769
10	9 38 19.66	1.9968	18 3 34.4	7.914	10	11 10 59.82	1.8742	10 27 38.2	10.813
11	9 40 19.38	1.9938	17 55 37.2	7.992	11	11 12 52.22	1.8724	10 16 48.1	10.856
12	9 42 18.92	1.9908	17 47 35.4	8.068	12	11 14 44.51	1.8707	10 5 55.5	10.898
13	9 44 18.28	1.9878	17 39 29.1	8.142	13	11 16 36.70	1.8689	9 55 0.3	10.940
14	9 46 17.46	1.9847	17 31 18.3	8.217	14	11 18 28.78	1.8672	9 44 2.7	10.981
15	9 48 16.45	1.9817	17 23 3.0	8.292	15	11 20 20.77	1.8657	9 33 2.6	11.022
16	9 50 15.27	1.9788	17 14 43.3	8.365	16	11 22 12.66	1.8640	9 22 0.0	11.062
17	9 52 13.91	1.9758	17 6 19.2	8.437	17	11 24 4.45	1.8624	9 10 55.1	11.101
18	9 54 12.37	1.9729	16 57 50.8	8.509	18	11 25 56.15	1.8610	8 59 47.9	11.138
19	9 56 10.66	1.9700	16 49 18.1	8.581	19	11 27 47.77	1.8595	8 48 38.5	11.176
20	9 58 8.77	1.9670	16 40 41.1	8.652	20	11 29 39.29	1.8580	8 37 26.8	11.213
21	10 0 6.70	1.9641	16 31 59.9	8.721	21	11 31 30.73	1.8567	8 26 12.9	11.250
22	10 2 4.46	1.9612	16 23 14.6	8.790	22	11 33 22.09	1.8554	8 14 56.8	11.286
23	10 4 2.05	1.9583	N. 16 14 25.1	8.859	23	11 35 13.38	1.8541	N. 8 3 38.6	11.320
WEDNESDAY 26.					FRIDAY 28.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	10 5 59.46	1.9555	N. 16 5 31.5	8.927	0	11 37 4.58	1.8528	N. 7 52 18.4	11.354
1	10 7 56.71	1.9527	15 56 33.9	8.993	1	11 38 55.71	1.8516	7 40 56.1	11.387
2	10 9 53.78	1.9498	15 47 32.3	9.060	2	11 40 46.77	1.8505	7 29 31.9	11.420
3	10 11 50.69	1.9471	15 38 26.7	9.126	3	11 42 37.77	1.8494	7 18 5.7	11.452
4	10 13 47.43	1.9442	15 29 17.2	9.191	4	11 44 28.70	1.8483	7 6 37.6	11.483
5	10 15 44.00	1.9415	15 20 3.8	9.255	5	11 46 19.57	1.8472	6 55 7.7	11.514
6	10 17 40.41	1.9388	15 10 46.6	9.318	6	11 48 10.37	1.8462	6 43 35.9	11.545
7	10 19 36.66	1.9362	15 1 25.6	9.382	7	11 50 1.12	1.8454	6 32 2.3	11.574
8	10 21 32.75	1.9334	14 52 0.8	9.444	8	11 51 51.82	1.8446	6 20 27.0	11.602
9	10 23 28.67	1.9307	14 42 32.3	9.505	9	11 53 42.47	1.8437	6 8 50.0	11.630
10	10 25 24.44	1.9282	14 33 0.2	9.566	10	11 55 33.07	1.8429	5 57 11.4	11.657
11	10 27 20.05	1.9255	14 23 24.4	9.627	11	11 57 23.62	1.8422	5 45 31.2	11.683
12	10 29 15.50	1.9229	14 13 45.0	9.686	12	11 59 14.13	1.8415	5 33 49.4	11.709
13	10 31 10.80	1.9204	14 4 2.1	9.744	13	12 1 4.60	1.8409	5 22 6.1	11.734
14	10 33 5.95	1.9178	13 54 15.7	9.802	14	12 2 55.04	1.8403	5 10 21.3	11.759
15	10 35 0.94	1.9153	13 44 25.8	9.859	15	12 4 45.44	1.8397	4 58 35.0	11.783
16	10 36 55.79	1.9129	13 34 32.6	9.916	16	12 6 35.81	1.8393	4 46 47.3	11.806
17	10 38 50.49	1.9105	13 24 35.9	9.972	17	12 8 26.16	1.8389	4 34 58.3	11.828
18	10 40 45.05	1.9081	13 14 35.9	10.027	18	12 10 16.48	1.8386	4 23 7.9	11.850
19	10 42 39.46	1.9057	13 4 32.7	10.081	19	12 12 6.79	1.8382	4 11 16.3	11.871
20	10 44 33.73	1.9034	12 54 26.2	10.136	20	12 13 57.07	1.8379	3 59 23.4	11.891
21	10 46 27.87	1.9011	12 44 16.4	10.189	21	12 15 47.34	1.8377	3 47 29.4	11.910
22	10 48 21.86	1.8987	12 34 3.5	10.240	22	12 17 37.00	1.8376	3 35 34.2	11.929
23	10 50 15.72	1.8965	12 23 47.6	10.292	23	12 19 27.85	1.8375	3 23 37.9	11.947
24	10 52 9.44	1.8942	N. 12 13 28.5	10.343	24	12 21 18.10	1.8374	N. 3 11 40.5	11.965

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 29.					MONDAY 31.				
0	12 21 18.10	1.8374	N. 3 11 40.5	11.965	0	13 50 30.22	1.9019	S. 6 29 19.3	11.961
1	12 23 8.34	1.8374	2 59 42.1	11.982	1	13 52 24.42	1.9047	6 41 16.4	11.948
2	12 24 58.59	1.8376	2 47 42.7	11.998	2	13 54 18.79	1.9077	6 53 12.4	11.923
3	12 26 48.85	1.8377	2 35 42.3	12.014	3	13 56 13.34	1.9106	7 5 7.2	11.902
4	12 28 39.11	1.8377	2 23 41.0	12.028	4	13 58 8.06	1.9135	7 17 0.7	11.881
5	12 30 29.37	1.8378	2 11 38.9	12.042	5	14 0 2.96	1.9166	7 28 52.9	11.859
6	12 32 19.65	1.8382	1 59 35.9	12.056	6	14 1 58.05	1.9197	7 40 43.8	11.837
7	12 34 9.96	1.8386	1 47 32.2	12.068	7	14 3 53.33	1.9230	7 52 33.3	11.813
8	12 36 0.28	1.8389	1 35 27.8	12.080	8	14 5 48.81	1.9262	8 4 21.4	11.788
9	12 37 50.63	1.8393	1 23 22.6	12.092	9	14 7 44.48	1.9295	8 16 7.9	11.768
10	12 39 41.00	1.8398	1 11 16.8	12.102	10	14 9 40.35	1.9328	8 27 52.9	11.737
11	12 41 31.41	1.8404	0 59 10.4	12.112	11	14 11 36.42	1.9362	8 39 36.3	11.710
12	12 43 21.85	1.8410	0 47 3.4	12.121	12	14 13 32.70	1.9397	8 51 18.1	11.682
13	12 45 12.33	1.8417	0 34 55.9	12.129	13	14 15 29.19	1.9433	9 2 58.2	11.653
14	12 47 2.85	1.8424	0 22 47.9	12.137	14	14 17 25.90	1.9470	9 14 36.5	11.623
15	12 48 53.42	1.8432	N. 0 10 39.5	12.143	15	14 19 22.83	1.9507	9 26 13.0	11.592
16	12 50 44.03	1.8440	S. 0 1 29.3	12.150	16	14 21 19.98	1.9543	9 37 47.6	11.561
17	12 52 34.70	1.8449	0 13 38.5	12.155	17	14 23 17.35	1.9581	9 49 20.3	11.529
18	12 54 25.42	1.8458	0 25 47.9	12.160	18	14 25 14.95	1.9620	10 0 51.1	11.496
19	12 56 16.20	1.8468	0 37 57.7	12.165	19	14 27 12.79	1.9660	10 12 19.8	11.462
20	12 58 7.04	1.8478	0 50 7.7	12.168	20	14 29 10.87	1.9700	10 23 46.5	11.427
21	12 59 57.94	1.8490	1 2 17.8	12.170	21	14 31 9.19	1.9740	10 35 11.0	11.390
22	13 1 48.92	1.8502	1 14 28.1	12.172	22	14 33 7.75	1.9781	10 46 33.3	11.353
23	13 3 39.97	1.8514	S. 1 26 38.5	12.174	23	14 35 6.56	1.9822	S. 10 57 53.4	11.316
SUNDAY 30.					TUESDAY, SEPTEMBER 1.				
0	13 5 31.09	1.8527	S. 1 38 49.0	12.175	0	14 37 5.62	1.9865	S. 11 9 11.2	11.277
1	13 7 22.29	1.8541	1 50 59.5	12.174					
2	13 9 13.58	1.8555	2 3 9.9	12.172					
3	13 11 4.95	1.8570	2 15 20.2	12.171					
4	13 12 56.42	1.8585	2 27 30.4	12.169					
5	13 14 47.97	1.8600	2 39 40.5	12.167					
6	13 16 39.62	1.8617	2 51 50.4	12.162					
7	13 18 31.38	1.8635	3 4 0.0	12.157					
8	13 20 23.24	1.8652	3 16 9.2	12.151					
9	13 22 15.21	1.8671	3 28 18.1	12.146					
10	13 24 7.29	1.8690	3 40 26.7	12.139					
11	13 25 59.49	1.8709	3 52 34.8	12.131					
12	13 27 51.80	1.8729	4 4 42.4	12.122					
13	13 29 44.24	1.8751	4 16 49.5	12.113					
14	13 31 36.81	1.8772	4 28 56.0	12.103					
15	13 33 29.50	1.8793	4 41 1.9	12.093					
16	13 35 22.33	1.8817	4 53 7.2	12.082					
17	13 37 15.30	1.8839	5 5 11.7	12.068					
18	13 39 8.40	1.8862	5 17 15.4	12.056					
19	13 41 1.65	1.8887	5 29 18.4	12.042					
20	13 42 55.05	1.8913	5 41 20.5	12.027					
21	13 44 48.61	1.8939	5 53 21.7	12.012					
22	13 46 42.32	1.8965	6 5 21.9	11.995					
23	13 48 36.19	1.8992	6 17 21.1	11.978					
24	13 50 30.22	1.9019	S. 6 29 19.3	11.961					

PHASES OF THE MOON.

	d	h	m
☾ First Quarter	Aug.	4	21 40.4
○ Full Moon		11	16 58.8
☾ Last Quarter		18	9 25.5
● New Moon		26	10 58.9

	d	h
☾ Perigee	Aug.	11 21.6
☾ Apogee		25 18.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
1	SUN	W.	45 58 2	3416	47 20 0	3411	48 42 4	3405	50 4 15	3399
	Antares	E.	74 28 50	3077	73 0 13	3073	71 31 30	3068	70 2 41	3064
	α Aquilæ	E.	117 47 39	3958	116 35 18	3932	115 22 31	3906	114 9 17	3880
2	SUN	W.	56 57 1	3363	58 20 0	3354	59 43 8	3345	61 6 27	3336
	Antares	E.	62 37 7	3036	61 7 39	3030	59 38 3	3023	58 8 18	3016
	α Aquilæ	E.	107 56 53	3768	106 41 17	3748	105 25 21	3729	104 9 5	3711
3	SUN	W.	68 5 45	3286	69 30 13	3274	70 54 54	3262	72 19 50	3250
	Antares	E.	50 37 23	2978	49 6 43	2970	47 35 53	2962	46 4 53	2954
	α Aquilæ	E.	97 43 7	3629	96 25 4	3614	95 6 45	3600	93 48 10	3587
4	SUN	W.	79 28 15	3183	80 54 45	3168	82 21 32	3153	83 48 38	3138
	Antares	E.	38 27 17	2914	36 55 16	2907	35 23 6	2900	33 50 47	2894
	α Aquilæ	E.	87 11 44	3585	85 51 47	3515	84 31 39	3505	83 11 19	3495
5	SUN	W.	91 8 53	3056	92 37 57	3039	94 7 22	3021	95 37 9	3003
	Spica	W.	22 3 16	2932	23 34 48	2894	25 7 15	2856	26 40 32	2820
	α Aquilæ	E.	76 27 13	3457	75 6 0	3453	73 44 42	3449	72 23 20	3446
	Fomalhaut	E.	108 58 9	2921	107 26 17	2901	105 53 59	2882	104 21 17	2862
6	SUN	W.	103 11 47	2910	104 43 53	2891	106 16 24	2871	107 49 20	2852
	Spica	W.	34 37 27	2674	36 14 42	2649	37 52 31	2624	39 30 54	2599
	α Aquilæ	E.	65 36 14	3454	64 14 58	3461	62 53 50	3470	61 32 52	3481
	Fomalhaut	E.	96 31 27	2766	94 56 14	2747	93 20 36	2728	91 44 33	2709
	α Pegasi	E.	112 41 19	3060	111 12 20	3030	109 42 45	3008	108 12 35	2976
7	SUN	W.	115 40 20	2753	117 15 49	2733	118 51 45	2714	120 28 6	2694
	Spica	W.	47 50 49	2487	49 32 21	2465	51 14 24	2443	52 56 57	2423
	Fomalhaut	E.	83 38 9	2619	81 59 40	2602	80 20 48	2585	78 41 33	2569
	α Pegasi	E.	100 33 34	2851	99 0 12	2829	97 26 21	2807	95 52 2	2785
	SATURN	E.	119 47 10	2426	118 4 13	2408	116 20 49	2389	114 36 58	2370
8	Spica	W.	61 37 0	2323	63 22 27	2304	65 8 21	2285	66 54 43	2266
	Fomalhaut	E.	70 19 58	2497	68 38 40	2484	66 57 4	2472	65 15 12	2463
	α Pegasi	E.	87 53 46	2691	86 16 54	2675	84 39 41	2660	83 2 7	2646
	SATURN	E.	105 50 58	2278	104 4 26	2260	102 17 28	2242	100 30 3	2225
9	Spica	W.	75 53 5	2182	77 42 0	2166	79 31 19	2151	81 21 1	2137
	Antares	W.	30 13 20	2265	32 0 11	2239	33 47 41	2214	35 35 47	2192
	Fomalhaut	E.	56 42 40	2427	54 59 44	2425	53 16 45	2425	51 33 46	2427
	α Pegasi	E.	74 50 3	2593	73 10 58	2587	71 31 45	2582	69 52 25	2579
	SATURN	E.	91 26 40	2143	89 36 46	2128	87 46 30	2114	85 55 52	2100
	α Arietis	E.	117 32 43	2321	115 47 14	2301	114 1 16	2282	112 14 49	2263
10	Spica	W.	90 34 40	2074	92 26 20	2063	94 18 16	2053	96 10 27	2043
	Antares	W.	44 43 58	2102	46 34 54	2088	48 26 12	2075	50 17 51	2063
	Fomalhaut	E.	43 0 51	2483	41 19 14	2507	39 38 10	2536	37 57 46	2572
	α Pegasi	E.	61 35 38	2595	59 56 36	2606	58 17 49	2620	56 39 20	2637
	SATURN	E.	76 37 31	2037	74 44 55	2026	72 52 2	2016	70 58 54	2007
	α Arietis	E.	103 16 16	2186	101 27 27	2173	99 38 18	2162	97 48 52	2151

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	SUN	W.	51 26 33	3393	52 48 58	3386	54 11 31	3379	55 34 12	3371
	Antares	E.	68 33 47	3059	67 4 47	3054	65 35 41	3048	64 6 28	3042
	α Aquilæ	E.	112 55 36	3855	111 41 30	3832	110 27 1	3810	109 12 8	3788
2	SUN	W.	62 29 56	3327	63 53 36	3317	65 17 27	3307	66 41 30	3297
	Antares	E.	56 38 25	3009	55 8 23	3002	53 38 13	2994	52 7 53	2986
	α Aquilæ	E.	102 52 29	3693	101 35 35	3677	100 18 23	3661	99 0 54	3645
3	SUN	W.	73 45 0	3237	75 10 25	3224	76 36 5	3210	78 2 2	3197
	Antares	E.	44 33 43	2946	43 2 22	2937	41 30 50	2929	39 59 8	2922
	α Aquilæ	E.	92 29 21	3574	91 10 18	3561	89 51 0	3548	88 31 28	3536
4	SUN	W.	85 16 2	3122	86 43 45	3106	88 11 47	3089	89 40 10	3073
	Antares	E.	32 18 20	2889	30 45 47	2885	29 13 9	2883	27 40 29	2883
	α Aquilæ	E.	81 50 49	3486	80 30 8	3477	79 9 18	3470	77 48 19	3463
5	SUN	W.	97 7 18	2985	98 37 50	2966	100 8 45	2947	101 40 4	2928
	Spica	W.	28 14 34	2787	29 49 19	2756	31 24 45	2728	33 0 48	2701
	α Aquilæ	E.	71 1 55	3444	69 40 28	3444	68 19 1	3446	66 57 36	3449
	Fomalhaut	E.	102 48 9	2842	101 14 36	2823	99 40 38	2804	98 6 15	2785
6	SUN	W.	109 22 41	2832	110 56 27	2812	112 30 39	2792	114 5 17	2773
	Spica	W.	41 9 50	2576	42 49 18	2553	44 29 17	2530	46 9 48	2509
	α Aquilæ	E.	60 12 7	3196	58 51 38	3154	57 31 30	3135	56 11 45	3160
	Fomalhaut	E.	90 8 5	2690	88 31 12	2672	86 53 55	2655	85 16 14	2637
	α Pegasi	E.	106 41 52	2950	105 10 36	2924	103 38 47	2899	102 6 26	2875
7	SUN	W.	122 4 54	2675	123 42 7	2656	125 19 47	2637	126 57 52	2617
	Spica	W.	54 39 59	2402	56 23 31	2382	58 7 32	2362	59 52 2	2342
	Fomalhaut	E.	77 1 56	2553	75 21 57	2538	73 41 37	2524	72 0 57	2510
	α Pegasi	E.	94 17 15	2764	92 42 0	2745	91 6 20	2726	89 30 15	2708
	SATURN	E.	112 52 40	2351	111 7 55	2333	109 22 43	2314	107 37 4	2296
8	Spica	W.	68 41 32	2249	70 28 47	2231	72 16 28	2214	74 4 34	2198
	Fomalhaut	E.	63 33 5	2452	61 50 44	2444	60 8 12	2437	58 25 30	2431
	α Pegasi	E.	81 24 15	2633	79 46 5	2621	78 7 38	2610	76 28 57	2601
	SATURN	E.	98 42 13	2208	96 53 57	2191	95 5 16	2175	93 16 10	2159
9	Spica	W.	83 11 4	2123	85 1 29	2109	86 52 14	2097	88 43 18	2085
	Antares	W.	37 24 27	2171	39 13 38	2152	41 3 18	2134	42 53 25	2117
	Fomalhaut	E.	49 50 49	2131	48 7 59	2139	46 25 20	2149	44 42 55	2164
	α Pegasi	E.	68 13 1	2577	66 33 35	2579	64 54 11	2582	63 14 51	2587
	SATURN	E.	84 4 52	2086	82 13 31	2073	80 21 50	2061	78 29 50	2049
	α Arietis	E.	110 27 55	2245	108 40 35	2229	106 52 51	2214	105 4 44	2200
10	Spica	W.	98 2 52	2036	99 55 30	2029	101 48 20	2022	103 41 21	2016
	Antares	W.	52 9 48	2052	54 2 2	2041	55 54 33	2032	57 47 17	2024
	Fomalhaut	E.	36 18 12	2616	34 39 39	2670	33 2 19	2736	31 26 27	2815
	α Pegasi	E.	55 1 15	2657	53 23 38	2683	51 46 35	2713	50 10 12	2747
	SATURN	E.	69 5 31	1999	67 11 55	1991	65 18 7	1984	63 24 8	1978
	α Arietis	E.	95 59 11	2141	94 9 15	2133	92 19 6	2126	90 28 46	2119

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	III ^h	P. L. of Diff.	VI ^h	P. L. of Diff.	IX ^h	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
11	Spica W.	105 34 30	2011	107 27 47	2007	109 21 11	2004	111 14 39	2001
	Antares W.	59 40 14	2017	61 33 22	2010	63 26 40	2005	65 20 7	2001
	SATURN E.	61 29 59	1973	59 35 41	1968	57 41 16	1964	55 46 45	1961
	α Arietis E.	88 38 16	2114	86 47 38	2110	84 56 53	2106	83 6 3	2103
	Aldebaran E.	119 43 27	1986	117 49 30	1980	115 55 24	1976	114 1 11	1973
12	Antares W.	74 48 35	1993	76 42 21	1993	78 36 6	1995	80 29 48	1998
	SATURN E.	46 13 25	1958	44 18 45	1960	42 24 9	1963	40 29 37	1967
	α Arietis E.	73 51 37	2110	72 0 53	2115	70 10 16	2121	68 19 48	2128
	Aldebaran E.	104 29 11	1967	102 34 45	1968	100 40 21	1971	98 46 0	1974
13	Antares W.	89 56 46	2025	91 49 42	2032	93 42 26	2041	95 34 57	2050
	α Aquilæ W.	50 1 50	3312	51 25 48	3451	52 50 57	3198	54 17 10	3151
	SATURN E.	30 58 58	2001	29 5 25	2011	27 12 8	2021	25 19 7	2033
	α Arietis E.	59 10 59	2185	57 22 9	2200	55 33 42	2218	53 45 42	2238
	Aldebaran E.	89 15 56	2001	87 22 23	2009	85 29 2	2018	83 35 54	2026
14	Antares W.	104 53 35	2107	106 44 24	2120	108 34 52	2134	110 24 59	2148
	α Aquilæ W.	61 39 56	3000	63 10 9	2983	64 40 43	2969	66 11 35	2958
	α Arietis E.	44 53 53	2367	43 9 31	2401	41 25 57	2438	39 43 15	2479
	Aldebaran E.	74 14 10	2082	72 22 43	2095	70 31 35	2108	68 40 48	2122
	Pollux E.	118 22 57	2096	116 31 51	2108	114 41 4	2121	112 50 36	2134
15	α Aquilæ W.	73 48 9	2944	75 19 32	2948	76 50 50	2954	78 22 2	2961
	Fomalhaut W.	38 29 24	2691	40 6 16	2672	41 43 34	2656	43 21 13	2644
	Aldebaran E.	59 32 26	2198	57 43 56	2215	55 55 51	2232	54 8 11	2249
	Pollux E.	103 43 31	2207	101 55 14	2223	100 7 20	2239	98 19 51	2256
	SUN E.	133 19 4	2503	131 37 56	2520	129 57 11	2537	128 16 49	2554
16	α Aquilæ W.	85 55 2	3020	87 24 50	3036	88 54 18	3053	90 23 25	3072
	Fomalhaut W.	51 31 52	2633	53 10 3	2637	54 48 8	2642	56 26 6	2649
	α Pegasi W.	38 50 20	3515	40 10 27	3453	41 31 44	3397	42 54 4	3348
	SATURN W.	13 32 42	2382	15 16 43	2387	17 0 36	2394	18 44 19	2404
	Aldebaran E.	45 16 22	2340	43 31 20	2359	41 46 46	2378	40 2 39	2397
	Pollux E.	89 28 39	2342	87 43 41	2360	85 59 9	2378	84 15 3	2396
	SUN E.	120 1 8	2646	118 23 15	2665	116 45 48	2684	115 8 46	2703
17	α Aquilæ W.	97 42 56	3179	99 9 30	3204	100 35 34	3230	102 1 8	3257
	Fomalhaut W.	64 33 6	2698	66 9 48	2710	67 46 15	2722	69 22 25	2735
	α Pegasi W.	49 57 9	3801	51 23 17	3185	52 49 45	3172	54 16 28	3162
	SATURN W.	27 18 33	2475	29 0 21	2490	30 41 48	2506	32 22 53	2522
	Aldebaran E.	31 29 0	2497	29 47 42	2517	28 6 52	2538	26 26 32	2560
	Pollux E.	75 41 1	2487	73 59 30	2505	72 18 24	2523	70 37 43	2541
	SUN E.	107 9 58	2799	105 35 29	2818	104 1 25	2837	102 27 45	2856
18	Fomalhaut W.	77 18 52	2805	78 53 14	2819	80 27 17	2833	82 1 2	2848
	α Pegasi W.	61 32 10	3143	62 59 27	3145	64 26 42	3147	65 53 55	3150
	SATURN W.	40 42 37	2604	42 21 27	2619	43 59 56	2635	45 38 3	2650
	Pollux E.	62 20 31	2630	60 42 17	2648	59 4 27	2665	57 27 0	2681
	SUN E.	94 45 28	2948	93 14 11	2966	91 43 16	2984	90 12 44	3001
19	Fomalhaut W.	89 45 3	2921	91 16 55	2936	92 48 28	2950	94 19 43	2965

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
11	Spica W.	113 8 11	2000	115 1 45	1999	116 55 21	2000	118 48 56	2001
	Antares W.	67 13 40	1997	69 7 19	1994	71 1 2	1993	72 54 48	1992
	SATURN E.	53 52 9	1959	51 57 30	1958	50 2 49	1957	48 8 7	1957
	α Arietis E.	81 15 9	2103	79 24 14	2103	77 33 19	2104	75 42 26	2107
	Aldebaran E.	112 6 53	1970	110 12 31	1968	108 18 5	1967	106 23 38	1967
12	Antares W.	82 23 26	2002	84 16 58	2006	86 10 43	2012	88 3 39	2018
	SATURN E.	38 35 11	1972	36 40 52	1978	34 46 43	1985	32 52 44	1993
	α Arietis E.	66 29 32	2137	64 39 29	2147	62 49 41	2158	61 0 10	2171
	Aldebaran E.	96 51 45	1978	94 57 36	1982	93 3 34	1987	91 9 40	1994
13	Antares W.	97 27 14	2060	99 19 15	2070	101 11 0	2082	103 2 27	2094
	α Aquilæ W.	55 44 18	3110	57 12 15	3076	58 40 54	3047	60 10 9	3022
	SATURN E.	23 26 25	2047	21 34 5	2063	19 42 9	2081	17 50 41	2101
	α Arietis E.	51 58 12	2260	50 11 13	2283	48 24 47	2309	46 38 59	2337
	Aldebaran E.	81 43 1	2036	79 50 23	2046	77 58 1	2057	76 5 56	2069
14	Antares W.	112 14 45	2163	114 4 8	2180	115 53 6	2196	117 41 40	2212
	α Aquilæ W.	67 42 41	2950	69 13 56	2945	70 45 18	2942	72 16 43	2942
	α Arietis E.	38 1 32	2524	36 20 52	2575	34 41 22	2632	33 3 11	2695
	Aldebaran E.	66 50 22	2137	65 0 19	2152	63 10 38	2167	61 21 20	2182
	Pollux E.	111 0 28	2148	109 10 41	2162	107 21 16	2176	105 32 12	2191
15	α Aquilæ W.	79 53 4	2969	81 23 55	2980	82 54 32	2992	84 24 55	3005
	Fomalhaut W.	44 59 8	2636	46 37 14	2632	48 15 25	2630	49 53 39	2631
	Aldebaran E.	52 20 57	2267	50 34 9	2285	48 47 47	2303	47 1 51	2321
	Pollux E.	96 32 46	2273	94 46 6	2290	92 59 52	2307	91 14 3	2324
	SUN E.	126 36 51	2572	124 57 18	2590	123 18 10	2608	121 39 26	2627
16	α Aquilæ W.	91 52 9	3091	93 20 29	3112	94 48 24	3133	96 15 53	3155
	Fomalhaut W.	58 3 54	2657	59 41 31	2666	61 18 56	2676	62 56 8	2687
	α Pegasi W.	44 17 20	3307	45 41 23	3272	47 6 7	3243	48 31 24	3220
	SATURN W.	20 27 48	2416	22 10 59	2430	23 53 51	2445	25 36 23	2460
	Aldebaran E.	38 18 59	2416	36 35 47	2436	34 53 3	2456	33 10 47	2476
	Pollux E.	82 31 22	2415	80 48 8	2433	79 5 20	2451	77 22 58	2469
	SUN E.	113 32 9	2722	111 55 58	2741	110 20 13	2760	108 44 53	2779
17	α Aquilæ W.	103 26 10	3285	104 50 39	3313	106 14 35	3343	107 37 56	3375
	Fomalhaut W.	70 58 18	2749	72 33 53	2762	74 9 11	2775	75 44 11	2790
	α Pegasi W.	55 43 23	3154	57 10 27	3148	58 37 38	3145	60 4 53	3143
	SATURN W.	34 3 35	2539	35 43 54	2555	37 23 51	2572	39 3 25	2588
	Aldebaran E.	24 46 43	2583	23 7 25	2607	21 28 39	2632	19 50 27	2658
	Pollux E.	68 57 27	2559	67 17 37	2577	65 38 11	2595	63 59 9	2612
	SUN E.	100 54 29	2875	99 21 38	2894	97 49 12	2912	96 17 9	2930
18	Fomalhaut W.	83 34 28	2862	85 7 35	2877	86 40 23	2892	88 12 52	2906
	α Pegasi W.	67 21 4	3151	68 48 8	3160	70 15 5	3166	71 41 55	3172
	SATURN W.	47 15 50	2666	48 53 16	2681	50 30 21	2696	52 7 6	2710
	Pollux E.	55 49 55	2698	54 13 13	2715	52 36 53	2732	51 0 55	2748
	SUN E.	88 42 33	3019	87 12 44	3036	85 43 16	3053	84 14 9	3069
19	Fomalhaut W.	95 50 39	2980	97 21 17	2995	98 51 36	3009	100 21 37	3023

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
19	α Pegasi W.	73 8 38	3179	74 35 12	3187	76 1 37	3195	77 27 52	3204
	SATURN W.	53 43 32	2725	55 19 38	2739	56 55 26	2753	58 30 56	2766
	α Arietis W.	29 37 34	3326	31 1 15	3288	32 25 40	3297	33 50 42	3231
	Pollux E.	49 25 19	2764	47 50 4	2780	46 15 10	2796	44 40 37	2812
	SUN E.	82 45 22	3085	81 16 55	3101	79 48 47	3117	78 20 58	3132
20	Fomalhaut W.	101 51 21	3038	103 20 47	3052	104 49 55	3067	106 18 45	3081
	α Pegasi W.	84 36 28	3251	86 1 37	3262	87 26 33	3272	88 51 17	3283
	SATURN W.	66 24 7	2829	67 57 57	2841	69 31 31	2852	71 4 51	2863
	α Arietis W.	41 1 44	3162	42 28 39	3155	43 55 43	3149	45 22 53	3145
	Pollux E.	36 52 56	2890	35 20 24	2906	33 48 13	2922	32 16 22	2938
	SUN E.	71 6 18	3203	69 40 13	3216	68 14 23	3229	66 48 48	3242
21	α Pegasi W.	95 51 48	3339	97 15 14	3351	98 38 26	3363	100 1 25	3376
	SATURN W.	78 48 8	2913	80 20 10	2922	81 52 0	2931	83 23 40	2939
	α Arietis W.	52 39 25	3141	54 6 45	3142	55 34 4	3143	57 1 21	3145
	Aldebaran W.	20 19 49	2981	21 50 26	2984	23 21 0	2987	24 51 29	2991
	Pollux E.	24 42 29	3031	23 12 55	3054	21 43 50	3081	20 15 17	3111
	SUN E.	59 44 28	3300	58 20 16	3310	56 56 16	3320	55 32 27	3330
22	SATURN W.	90 59 28	2976	92 30 11	2983	94 0 45	2989	95 31 12	2995
	α Arietis W.	64 17 9	3157	65 44 10	3160	67 11 7	3162	68 38 2	3165
	Aldebaran W.	32 22 36	3014	33 52 31	3018	35 22 21	3023	36 52 5	3028
	SUN E.	48 36 9	3375	47 13 24	3383	45 50 48	3391	44 28 22	3399
23	SATURN W.	103 1 42	3020	104 31 30	3024	106 1 12	3028	107 30 50	3032
	α Arietis W.	75 51 48	3178	77 18 24	3181	78 44 56	3183	80 11 25	3185
	Aldebaran W.	44 19 23	3048	45 48 36	3052	47 17 44	3055	48 46 48	3058
	SUN E.	37 38 18	3435	36 16 41	3443	34 55 13	3450	33 33 53	3457
24	α Arietis W.	87 23 11	3197	88 49 24	3199	90 15 34	3201	91 41 42	3203
	Aldebaran W.	56 11 17	3071	57 40 1	3073	59 8 43	3075	60 37 23	3077
	SUN E.	26 49 16	3497	25 28 48	3506	24 8 30	3516	22 48 24	3528
28	SUN W.	17 33 28	3543	18 53 5	3523	20 13 4	3505	21 33 23	3488
	Antares E.	77 21 35	3073	75 52 53	3069	74 24 6	3065	72 55 14	3062
	α Aquilæ E.	120 11 48	4017	119 0 25	3983	117 48 29	3953	116 36 4	3926
29	SUN W.	28 18 59	3428	29 40 44	3417	31 2 41	3408	32 24 49	3399
	Antares E.	65 29 46	3043	64 0 26	3038	62 31 0	3034	61 1 29	3030
	α Aquilæ E.	110 27 30	3810	109 12 38	3791	107 57 26	3772	106 41 55	3754
30	SUN W.	39 18 5	3353	40 41 15	3344	42 4 36	3334	43 28 8	3325
	Antares E.	53 32 29	3005	52 2 23	3000	50 32 10	2995	49 1 51	2990
	α Aquilæ E.	100 19 57	3678	99 2 47	3665	97 45 23	3653	96 27 46	3642
31	SUN W.	50 28 36	3275	51 53 17	3264	53 18 10	3253	54 43 17	3242
	Antares E.	41 28 42	2965	39 57 45	2960	38 26 42	2956	36 55 34	2953
	α Aquilæ E.	89 56 45	3592	88 38 2	3584	87 19 10	3577	86 0 10	3570

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Dist.	XVh	P. L. of Dist.	XVIIIh	P. L. of Dist.	XXIh	P. L. of Dist.
19	<i>α</i> Pegasi W.	78 53 57	3213	80 19 51	3222	81 45 35	3231	83 11 7	3241
	SATURN W.	60 6 8	2779	61 41 3	2792	63 15 40	2805	64 50 1	2817
	<i>α</i> Arietis W.	35 16 14	3210	36 42 11	3193	38 8 27	3180	39 34 59	3170
	Pollux E.	43 6 24	2888	41 32 32	2843	39 59 0	2859	38 25 48	2874
	SUN E.	76 53 27	3147	75 26 14	3161	73 59 19	3175	72 32 40	3189
20	Fomalhaut W.	107 47 18	3096	109 15 33	3111	110 43 29	3125	112 11 8	3138
	<i>α</i> Pegasi W.	90 15 49	3294	91 40 8	3305	93 4 15	3316	94 28 8	3327
	SATURN W.	72 37 57	2874	74 10 49	2884	75 43 28	2894	77 15 54	2904
	<i>α</i> Arietis W.	46 50 8	3143	48 17 25	3142	49 44 44	3141	51 12 4	3140
	Pollux E.	30 44 51	2955	29 13 41	2973	27 42 54	2991	26 12 29	3010
	SUN E.	65 23 28	3254	63 58 23	3265	62 33 31	3277	61 8 53	3288
21	<i>α</i> Pegasi W.	101 24 9	3389	102 46 38	3402	104 8 53	3414	105 30 53	3426
	SATURN W.	84 55 9	2947	86 26 28	2955	87 57 37	2962	89 28 37	2969
	<i>α</i> Arietis W.	58 28 36	3147	59 55 48	3149	61 22 58	3152	62 50 5	3154
	Aldebaran W.	26 21 53	2995	27 52 12	2999	29 22 26	3004	30 52 34	3009
	Pollux E.	18 47 19	3146	17 20 3	3187	15 53 38	3239	14 28 16	3305
	SUN E.	54 8 50	3339	52 45 24	3349	51 22 9	3358	49 59 4	3366
22	SATURN W.	97 1 31	3000	98 31 43	3005	100 1 49	3010	101 31 48	3015
	<i>α</i> Arietis W.	70 4 54	3168	71 31 42	3170	72 58 27	3173	74 25 9	3175
	Aldebaran W.	38 21 43	3032	39 51 16	3037	41 20 43	3041	42 50 5	3044
	SUN E.	43 6 4	3407	41 43 55	3415	40 21 55	3422	39 0 3	3428
23	SATURN W.	109 0 23	3035	110 29 52	3039	112 59 17	3042	114 28 38	3044
	<i>α</i> Arietis W.	81 37 52	3188	83 4 16	3190	84 30 37	3192	85 56 55	3194
	Aldebaran W.	50 15 49	3061	51 44 46	3064	53 13 39	3066	54 42 30	3069
	SUN E.	32 12 41	3464	30 51 37	3472	29 30 41	3480	28 9 54	3488
24	<i>α</i> Arietis W.	93 7 48	3205	94 33 51	3207	95 59 52	3209	97 25 50	3211
	Aldebaran W.	62 6 1	3078	63 34 37	3079	65 3 12	3080	66 31 45	3081
	SUN E.	21 28 31	3543	20 8 54	3559	18 49 35	3577	17 30 35	3596
28	SUN W.	22 54 0	3473	24 14 54	3460	25 36 3	3448	26 57 25	3438
	Antares E.	71 26 18	3058	69 57 17	3054	68 28 12	3050	66 59 1	3047
	<i>α</i> Aquilæ E.	115 23 11	3900	114 9 52	3876	112 56 8	3853	111 42 0	3831
29	SUN W.	33 47 7	3389	35 9 36	3380	36 32 15	3371	37 55 5	3362
	Antares E.	59 31 53	3025	58 2 11	3020	56 32 23	3015	55 2 29	3010
	<i>α</i> Aquilæ E.	105 26 5	3737	104 9 57	3722	102 53 33	3707	101 36 53	3692
30	SUN W.	44 51 51	3315	46 15 45	3305	47 39 50	3295	49 4 7	3285
	Antares E.	47 31 26	2985	46 0 55	2980	44 30 17	2975	42 59 33	2970
	<i>α</i> Aquilæ E.	95 9 57	3631	93 51 55	3620	92 33 42	3610	91 15 19	3600
31	SUN W.	56 8 36	3231	57 34 8	3220	58 59 54	3208	60 25 54	3195
	Antares E.	35 24 22	2950	33 53 6	2947	32 21 46	2945	30 50 24	2944
	<i>α</i> Aquilæ E.	84 41 3	3564	83 21 49	3558	82 2 28	3553	80 43 2	3547

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ' "	"	' "	s	m s	s
Tues.	1	10 40 58.72	9.074	N. 8 20 30.5	- 54.40	15 53.05	64.38	0 0.37	0.781
Wed.	2	10 44 36.33	9.061	7 58 40.9	54.73	15 53.29	64.34	0 19.27	0.793
Thur.	3	10 48 13.65	9.049	7 36 43.8	55.04	15 53.53	64.30	0 38.47	0.805
Frid.	4	10 51 50.67	9.037	7 14 39.2	- 55.33	15 53.77	64.26	0 57.94	0.817
Sat.	5	10 55 27.43	9.026	6 52 27.8	55.61	15 54.01	64.22	1 17.67	0.828
SUN.	6	10 59 3.94	9.016	6 30 9.7	55.89	15 54.25	64.19	1 37.66	0.838
Mon.	7	11 2 40.22	9.007	6 7 45.3	- 56.15	15 54.50	64.16	1 57.88	0.847
Tues.	8	11 6 16.29	8.999	5 45 14.8	56.39	15 54.75	64.13	2 18.31	0.855
Wed.	9	11 9 52.17	8.992	5 22 38.8	56.62	15 55.00	64.11	2 38.91	0.863
Thur.	10	11 13 27.90	8.986	4 59 57.3	- 56.84	15 55.25	64.09	2 59.68	0.869
Frid.	11	11 17 3.49	8.981	4 37 10.8	57.04	15 55.50	64.07	3 20.58	0.874
Sat.	12	11 20 38.97	8.977	4 14 19.4	57.23	15 55.75	64.05	3 41.60	0.878
SUN.	13	11 24 14.37	8.974	3 51 23.5	- 57.41	15 56.01	64.04	4 2.71	0.881
Mon.	14	11 27 49.70	8.971	3 28 23.5	57.59	15 56.26	64.03	4 23.87	0.883
Tues.	15	11 31 24.98	8.970	3 5 19.5	57.75	15 56.51	64.02	4 45.07	0.884
Wed.	16	11 35 0.24	8.970	2 42 12.2	- 57.89	15 56.76	64.01	5 6.30	0.885
Thur.	17	11 38 35.50	8.970	2 19 1.4	58.01	15 57.02	64.01	5 27.54	0.885
Frid.	18	11 42 10.78	8.971	1 55 47.8	58.12	15 57.28	64.01	5 48.76	0.884
Sat.	19	11 45 46.09	8.973	1 32 31.7	- 58.22	15 57.54	64.02	6 9.94	0.882
SUN.	20	11 49 21.46	8.975	1 9 13.3	58.31	15 57.80	64.03	6 31.07	0.879
Mon.	21	11 52 56.90	8.978	0 45 52.9	58.39	15 58.06	64.04	6 52.13	0.876
Tues.	22	11 56 32.43	8.983	N. 0 22 31.0	- 58.44	15 58.32	64.05	7 13.10	0.872
Wed.	23	12 0 8.07	8.989	S. 0 0 52.1	58.48	15 58.59	64.07	7 33.95	0.866
Thur.	24	12 3 43.84	8.994	0 24 16.0	58.50	15 58.86	64.09	7 54.67	0.860
Frid.	25	12 7 19.77	9.000	0 47 40.4	- 58.51	15 59.13	64.11	8 15.24	0.853
Sat.	26	12 10 55.86	9.007	1 11 4.9	58.51	15 59.40	64.14	8 35.65	0.846
SUN.	27	12 14 32.12	9.015	1 34 29.2	58.50	15 59.68	64.17	8 55.88	0.838
Mon.	28	12 18 8.58	9.024	1 57 52.9	- 58.48	15 59.95	64.20	9 15.92	0.830
Tues.	29	12 21 45.27	9.033	2 21 15.6	58.42	16 0.23	64.23	9 35.74	0.821
Wed.	30	12 25 22.18	9.043	2 44 37.0	58.35	16 0.51	64.27	9 55.32	0.811
Thur.	31	12 28 59.34	9.054	S. 3 7 56.4	- 58.27	16 0.80	64.31	10 14.65	0.801

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.18 from the sidereal time. The sign - prefixed to the hourly change of declination indicates that north declinations are decreasing; south declinations increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ' "	"	m s	s	h m s
Tues.	1	10 40 58.72	9.076	N. 8 20 30.5	-54.41	0 0.38	0.781	10 40 59.10
Wed.	2	10 44 36.38	9.063	7 58 40.6	54.74	0 19.27	0.793	10 44 55.65
Thur.	3	10 48 13.74	9.051	7 36 43.2	55.05	0 38.46	0.805	10 48 52.20
Frid.	4	10 51 50.81	9.040	7 14 38.3	-55.35	0 57.95	0.817	10 52 48.76
Sat.	5	10 55 27.62	9.028	6 52 26.6	55.63	1 17.69	0.828	10 56 45.31
SUN.	6	10 59 4.18	9.018	6 30 8.2	55.90	1 37.68	0.838	11 0 41.86
Mon.	7	11 2 40.51	9.009	6 7 43.4	-56.16	1 57.91	0.847	11 4 38.42
Tues.	8	11 6 16.63	9.001	5 45 12.7	56.40	2 18.34	0.855	11 8 34.97
Wed.	9	11 9 52.57	8.994	5 22 36.3	56.63	2 38.95	0.863	11 12 31.52
Thur.	10	11 13 28.36	8.988	4 59 54.5	-56.85	2 59.72	0.869	11 16 28.08
Frid.	11	11 17 4.00	8.983	4 37 7.6	57.05	3 20.63	0.874	11 20 24.63
Sat.	12	11 20 39.53	8.980	4 14 15.9	57.24	3 41.65	0.878	11 24 21.18
SUN.	13	11 24 14.98	8.976	3 51 19.7	-57.43	4 2.75	0.881	11 28 17.73
Mon.	14	11 27 50.36	8.973	3 28 19.3	57.60	4 23.93	0.883	11 32 14.29
Tues.	15	11 31 25.70	8.972	3 5 15.0	57.75	4 45.14	0.884	11 36 10.84
Wed.	16	11 35 1.01	8.971	2 42 7.3	-57.88	5 6.38	0.885	11 40 7.39
Thur.	17	11 38 36.32	8.971	2 18 56.2	58.01	5 27.62	0.885	11 44 3.94
Frid.	18	11 42 11.65	8.973	1 55 42.2	58.13	5 48.85	0.884	11 48 0.50
Sat.	19	11 45 47.02	8.975	1 32 25.7	-58.24	6 10.03	0.882	11 51 57.05
SUN.	20	11 49 22.44	8.977	1 9 6.9	58.33	6 31.16	0.879	11 55 53.60
Mon.	21	11 52 57.93	8.981	0 45 46.2	58.40	6 52.23	0.876	11 59 50.16
Tues.	22	11 56 33.52	8.985	N. 0 22 24.0	-58.45	7 13.20	0.872	12 3 46.71
Wed.	23	12 0 9.22	8.990	S. 0 0 59.4	58.49	7 34.05	0.866	12 7 43.26
Thur.	24	12 3 45.04	8.996	0 24 23.7	58.51	7 54.78	0.860	12 11 39.82
Frid.	25	12 7 21.01	9.002	0 47 48.5	-58.52	8 15.36	0.853	12 15 36.37
Sat.	26	12 10 57.15	9.010	1 11 13.3	58.51	8 35.77	0.846	12 19 32.92
SUN.	27	12 14 33.47	9.017	1 34 37.9	58.50	8 56.00	0.838	12 23 29.47
Mon.	28	12 18 9.98	9.026	1 58 1.9	-58.48	9 16.04	0.830	12 27 26.03
Tues.	29	12 21 46.72	9.035	2 21 24.9	58.43	9 35.86	0.821	12 31 22.58
Wed.	30	12 25 23.68	9.045	2 44 46.6	58.37	9 55.45	0.811	12 35 19.13
Thur.	31	12 29 0.89	9.056	S. 3 8 6.4	-58.28	10 14.79	0.801	12 39 15.68

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
 The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing; south declinations increasing.

Diff. for 1 Hour,
 + 9'.8565.
 (Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	245	158 37 34.8	37 17.8	145.27	+ 0.55	0.003 8322	- 44.6	h m s 13 16 50.00
2	246	159 35 42.0	35 24.9	145.33	0.45	0.003 7245	45.1	13 12 54.10
3	247	160 33 50.5	33 33.3	145.39	0.33	0.003 6156	45.6	13 8 58.19
4	248	161 32 0.5	31 43.2	145.45	+ 0.19	0.003 5055	- 46.0	13 5 2.28
5	249	162 30 11.9	29 54.5	145.51	+ 0.05	0.003 3945	46.4	13 1 6.38
6	250	163 28 24.8	28 7.3	145.57	- 0.08	0.003 2826	46.7	12 57 10.47
7	251	164 26 39.2	26 21.5	145.63	- 0.21	0.003 1701	- 47.0	12 53 14.56
8	252	165 24 55.1	24 38.3	145.70	0.32	0.003 0571	47.1	12 49 18.65
9	253	166 23 12.7	22 54.8	145.77	0.40	0.002 9437	47.2	12 45 22.75
10	254	167 21 32.0	21 14.0	145.84	- 0.46	0.002 8301	- 47.3	12 41 26.84
11	255	168 19 53.1	19 35.1	145.92	0.47	0.002 7163	47.4	12 37 30.93
12	256	169 18 16.2	17 58.1	146.00	0.47	0.002 6024	47.5	12 33 35.02
13	257	170 16 41.3	16 23.1	146.09	- 0.45	0.002 4882	- 47.7	12 29 39.12
14	258	171 15 8.5	14 50.2	146.18	0.38	0.002 3736	47.8	12 25 43.21
15	259	172 13 37.8	13 19.4	146.27	0.28	0.002 2588	48.0	12 21 47.30
16	260	173 12 9.2	11 50.8	146.36	- 0.17	0.002 1435	- 48.2	12 17 51.39
17	261	174 10 42.9	10 24.3	146.45	- 0.04	0.002 0276	48.4	12 13 55.49
18	262	175 9 18.8	9 0.1	146.54	+ 0.08	0.001 9109	48.7	12 9 59.58
19	263	176 7 56.9	7 38.1	146.63	+ 0.19	0.001 7936	- 49.1	12 6 3.68
20	264	177 6 37.2	6 18.3	146.72	0.30	0.001 6754	49.4	12 2 7.77
21	265	178 5 19.6	5 0.6	146.81	0.38	0.001 5564	49.8	11 58 11.86
22	266	179 4 4.2	3 45.1	146.90	+ 0.47	0.001 4365	- 50.1	11 54 15.96
23	267	180 2 50.9	2 31.8	146.99	0.53	0.001 3157	50.5	11 50 20.05
24	268	181 1 39.7	1 20.5	147.09	0.57	0.001 1939	50.9	11 46 24.14
25	269	182 0 30.6	0 11.2	147.18	+ 0.58	0.001 0712	- 51.3	11 42 28.24
26	270	182 59 23.5	59 4.0	147.26	0.55	0.000 9475	51.7	11 38 32.33
27	271	183 58 18.3	57 58.8	147.33	0.50	0.000 8229	52.0	11 34 36.42
28	272	184 57 15.1	56 55.5	147.41	+ 0.42	0.000 6976	- 52.3	11 30 40.51
29	273	185 56 13.8	55 54.0	147.49	0.34	0.000 5714	52.6	11 26 44.61
30	274	186 55 14.2	54 54.4	147.56	0.24	0.000 4447	52.9	11 22 48.70
31	275	187 54 16.5	53 56.6	147.63	+ 0.11	0.000 3174	- 53.1	11 18 52.79

NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.

Diff. for 1 Hour.
— 9'.8296.
Table II.

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S									
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.	
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.	
	"	"	"	"	"	"	h m	m	d	
1	15 12.9	15 18.1	55 44.6	+ 1.53	56 3.8	+ 1.67	4 3.5	1.89	5.5	
2	15 23.8	15 29.9	56 24.7	1.80	56 47.0	1.92	4 50.7	2.02	6.5	
3	15 36.4	15 43.2	57 10.7	2.03	57 35.6	2.11	5 41.4	2.20	7.5	
4	15 50.2	15 57.3	58 1.4	+ 2.17	58 27.6	+ 2.19	6 36.2	2.37	8.5	
5	16 4.5	16 11.6	58 54.0	2.18	59 19.8	2.11	7 34.8	2.51	9.5	
6	16 18.3	16 24.7	59 44.7	2.00	60 7.9	1.83	8 35.8	2.57	10.5	
7	16 30.3	16 35.2	60 28.7	+ 1.61	60 46.6	+ 1.34	9 37.5	2.56	11.5	
8	16 39.1	16 41.9	61 0.9	1.02	61 11.0	+ 0.65	10 38.0	2.47	12.5	
9	16 43.3	16 43.6	61 16.5	+ 0.26	61 17.3	- 0.14	11 36.0	2.37	13.5	
10	16 42.4	16 39.9	61 13.0	- 0.55	61 4.0	- 0.94	12 31.3	2.25	14.5	
11	16 36.2	16 31.4	60 50.4	1.31	60 32.6	1.63	13 24.3	2.17	15.5	
12	16 25.6	16 19.0	60 11.3	1.90	59 47.1	2.11	14 15.9	2.13	16.5	
13	16 11.8	16 4.1	59 20.6	- 2.27	58 52.5	- 2.37	15 6.7	2.12	17.5	
14	15 56.3	15 48.4	58 23.7	2.41	57 54.7	2.40	15 57.6	2.13	18.5	
15	15 40.6	15 33.0	57 26.1	2.35	56 58.4	2.26	16 48.9	2.14	19.5	
16	15 25.8	15 19.1	56 32.0	- 2.13	56 7.3	- 1.98	17 40.5	2.15	20.5	
17	15 12.9	15 7.3	55 44.5	1.81	55 23.9	1.63	18 32.1	2.14	21.5	
18	15 2.3	14 57.9	55 5.5	1.44	54 49.4	1.24	19 22.9	2.10	22.5	
19	14 54.1	14 51.0	54 35.7	- 1.05	54 24.3	- 0.85	20 12.5	2.03	23.5	
20	14 48.6	14 46.7	54 15.2	0.67	54 8.3	0.49	21 0.3	1.95	24.5	
21	14 45.4	14 44.6	54 3.5	- 0.31	54 0.7	- 0.15	21 46.1	1.87	25.5	
22	14 44.4	14 44.6	53 59.8	0.00	54 0.6	+ 0.14	22 30.1	1.80	26.5	
23	14 45.3	14 46.3	54 3.1	+ 0.26	54 7.0	0.39	23 12.7	1.76	27.5	
24	14 47.8	14 49.5	54 12.3	0.49	54 18.9	0.60	23 54.4	1.73	28.5	
25	14 51.7	14 54.1	54 26.6	+ 0.69	54 35.5	+ 0.78	♄	. .	29.5	
26	14 56.8	14 59.7	54 45.3	0.86	54 56.1	0.94	0 36.1	1.75	0.9	
27	15 2.9	15 6.4	55 7.8	1.02	55 20.5	1.09	1 18.4	1.79	1.9	
28	15 10.1	15 14.0	55 34.1	+ 1.17	55 48.6	+ 1.25	2 2.2	1.87	2.9	
29	15 18.2	15 22.6	56 3.9	1.32	56 20.2	1.40	2 48.4	1.98	3.9	
30	15 27.3	15 32.2	56 37.5	1.47	56 55.5	1.54	3 37.6	2.12	4.9	
31	15 37.4	15 42.7	57 14.4	1.60	57 34.0	1.66	4 30.3	2.27	5.9	
32	15 48.2	15 53.8	57 54.2	+ 1.70	58 14.8	+ 1.72	5 26.3	2.40	6.9	

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 1.					THURSDAY 3.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	14 37 5.62	1.9865	S. 11 9 11.2	11.277	0	16 18 19.42	2.2485	S. 19 6 15.4	8.172
1	14 39 4.94	1.9907	11 20 26.7	11.237	1	16 20 34.52	2.2519	19 14 22.9	8.078
2	14 41 4.51	1.9951	11 31 39.7	11.197	2	16 22 50.01	2.2613	19 22 24.8	7.984
3	14 43 4.35	1.9995	11 42 50.3	11.155	3	16 25 5.88	2.2677	19 30 21.0	7.888
4	14 45 4.45	2.0039	11 53 58.3	11.112	4	16 27 22.13	2.2740	19 38 11.4	7.791
5	14 47 4.82	2.0084	12 5 3.8	11.069	5	16 29 38.76	2.2804	19 45 55.9	7.692
6	14 49 5.46	2.0130	12 16 6.6	11.024	6	16 31 55.78	2.2868	19 53 34.5	7.592
7	14 51 6.38	2.0177	12 27 6.7	10.978	7	16 34 13.18	2.2932	20 1 7.0	7.492
8	14 53 7.58	2.0223	12 38 4.0	10.932	8	16 36 30.96	2.2996	20 8 33.5	7.390
9	14 55 9.06	2.0271	12 48 58.5	10.884	9	16 38 49.13	2.3060	20 15 53.8	7.286
10	14 57 10.83	2.0319	12 59 50.1	10.836	10	16 41 7.68	2.3124	20 23 7.8	7.181
11	14 59 12.89	2.0367	13 10 38.8	10.786	11	16 43 26.62	2.3188	20 30 15.5	7.075
12	15 1 15.24	2.0416	13 21 24.4	10.735	12	16 45 45.94	2.3252	20 37 16.8	6.967
13	15 3 17.88	2.0466	13 32 7.0	10.684	13	16 48 5.65	2.3317	20 44 11.6	6.858
14	15 5 20.83	2.0517	13 42 46.5	10.632	14	16 50 25.74	2.3380	20 50 59.8	6.748
15	15 7 24.08	2.0567	13 53 22.8	10.577	15	16 52 46.21	2.3444	20 57 41.4	6.637
16	15 9 27.63	2.0618	14 3 55.8	10.522	16	16 55 7.07	2.3508	21 4 16.3	6.524
17	15 11 31.50	2.0670	14 14 25.5	10.467	17	16 57 28.31	2.3572	21 10 44.3	6.410
18	15 13 35.67	2.0722	14 24 51.8	10.410	18	16 59 49.93	2.3634	21 17 5.5	6.296
19	15 15 40.16	2.0775	14 35 14.7	10.352	19	17 2 11.92	2.3697	21 23 19.8	6.179
20	15 17 44.97	2.0828	14 45 34.1	10.293	20	17 4 34.30	2.3761	21 29 27.0	6.061
21	15 19 50.10	2.0882	14 55 49.9	10.232	21	17 6 57.05	2.3823	21 35 27.1	5.942
22	15 21 55.55	2.0936	15 6 2.0	10.172	22	17 9 20.18	2.3887	21 41 20.1	5.822
23	15 24 1.33	2.0991	S. 15 16 10.5	10.110	23	17 11 43.69	2.3948	S. 21 47 5.8	5.700
WEDNESDAY 2.					FRIDAY 4.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	15 26 7.44	2.1046	S. 15 26 15.2	10.047	0	17 14 7.56	2.4010	S. 21 52 44.1	5.577
1	15 28 13.88	2.1102	15 36 16.1	9.982	1	17 16 31.81	2.4072	21 58 15.0	5.453
2	15 30 20.66	2.1158	15 46 13.0	9.915	2	17 18 56.43	2.4133	22 3 38.5	5.328
3	15 32 27.78	2.1215	15 56 5.9	9.848	3	17 21 21.41	2.4193	22 8 54.4	5.202
4	15 34 35.24	2.1272	16 5 54.8	9.781	4	17 23 46.75	2.4254	22 14 2.7	5.073
5	15 36 43.04	2.1329	16 15 39.6	9.712	5	17 26 12.46	2.4315	22 19 3.2	4.944
6	15 38 51.19	2.1387	16 25 20.2	9.642	6	17 28 38.53	2.4374	22 23 56.0	4.815
7	15 40 59.68	2.1445	16 34 56.6	9.571	7	17 31 4.95	2.4433	22 28 41.0	4.683
8	15 43 8.53	2.1504	16 44 28.7	9.497	8	17 33 31.73	2.4492	22 33 18.0	4.550
9	15 45 17.73	2.1562	16 53 56.3	9.423	9	17 35 58.85	2.4549	22 37 47.0	4.417
10	15 47 27.28	2.1622	17 3 19.5	9.349	10	17 38 26.32	2.4607	22 42 8.0	4.282
11	15 49 37.19	2.1682	17 12 38.2	9.273	11	17 40 54.14	2.4665	22 46 20.8	4.145
12	15 51 47.46	2.1742	17 21 52.3	9.196	12	17 43 22.30	2.4721	22 50 25.4	4.007
13	15 53 58.09	2.1802	17 31 1.7	9.117	13	17 45 50.79	2.4777	22 54 21.7	3.869
14	15 56 9.09	2.1863	17 40 6.4	9.037	14	17 48 19.62	2.4832	22 58 9.7	3.729
15	15 58 20.45	2.1924	17 49 6.2	8.956	15	17 50 48.78	2.4887	23 1 49.2	3.587
16	16 0 32.18	2.1986	17 58 1.1	8.874	16	17 53 18.26	2.4941	23 5 20.2	3.446
17	16 2 44.28	2.2047	18 6 51.1	8.791	17	17 55 48.07	2.4994	23 8 42.7	3.303
18	16 4 56.75	2.2109	18 15 36.0	8.706	18	17 58 18.19	2.5046	23 11 56.6	3.159
19	16 7 9.59	2.2171	18 24 15.8	8.620	19	18 0 48.62	2.5097	23 15 1.8	3.013
20	16 9 22.80	2.2233	18 32 50.4	8.532	20	18 3 19.36	2.5148	23 17 58.2	2.867
21	16 11 36.39	2.2297	18 41 19.7	8.444	21	18 5 50.40	2.5198	23 20 45.8	2.720
22	16 13 50.36	2.2359	18 49 43.7	8.355	22	18 8 21.74	2.5247	23 23 24.6	2.572
23	16 16 4.70	2.2422	18 58 2.3	8.264	23	18 10 53.37	2.5296	23 25 54.5	2.422
24	16 18 19.42	2.2485	S. 19 6 15.4	8.172	24	18 13 25.29	2.5344	S. 23 28 15.3	2.272

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 5.					MONDAY 7.				
0	18 13 25.29	2.5344	S. 23 28 15.3	2.272	0	20 18 29.40	2.6303	S. 22 11 31.7	5.580
1	18 15 57.50	2.5391	23 30 27.1	2.121	1	20 21 7.19	2.6293	22 5 52.0	5.744
2	18 18 29.98	2.5436	23 32 29.8	1.968	2	20 23 44.92	2.6282	22 0 2.4	5.907
3	18 21 2.73	2.5481	23 34 23.3	1.815	3	20 26 22.58	2.6270	21 54 3.1	6.070
4	18 23 35.75	2.5525	23 36 7.6	1.662	4	20 29 0.16	2.6256	21 47 54.0	6.232
5	18 26 9.03	2.5567	23 37 42.7	1.507	5	20 31 37.65	2.6241	21 41 35.2	6.393
6	18 28 42.56	2.5609	23 39 8.4	1.351	6	20 34 15.05	2.6226	21 35 6.8	6.553
7	18 31 16.34	2.5650	23 40 24.8	1.194	7	20 36 52.36	2.6209	21 28 28.8	6.713
8	18 33 50.36	2.5690	23 41 31.7	1.037	8	20 39 29.56	2.6191	21 21 41.2	6.872
9	18 36 24.62	2.5728	23 42 29.2	0.878	9	20 42 6.65	2.6172	21 14 44.1	7.030
10	18 38 59.10	2.5766	23 43 17.1	0.719	10	20 44 43.63	2.6152	21 7 37.6	7.187
11	18 41 33.81	2.5803	23 43 55.5	0.560	11	20 47 20.48	2.6131	21 0 21.6	7.344
12	18 44 8.74	2.5839	23 44 24.3	0.399	12	20 49 57.20	2.6108	20 52 56.3	7.499
13	18 46 43.88	2.5873	23 44 43.4	0.238	13	20 52 33.78	2.6086	20 45 21.4	7.654
14	18 49 19.22	2.5906	23 44 52.9	-0.077	14	20 55 10.23	2.6062	20 37 37.8	7.807
15	18 51 54.75	2.5937	23 44 52.6	+0.086	15	20 57 46.53	2.6037	20 29 44.8	7.959
16	18 54 30.47	2.5969	23 44 42.6	0.248	16	21 0 22.67	2.6011	20 21 42.7	8.111
17	18 57 6.38	2.6000	23 44 22.8	0.412	17	21 2 58.66	2.5985	20 13 31.5	8.262
18	18 59 42.47	2.6028	23 43 53.1	0.577	18	21 5 34.49	2.5957	20 5 11.3	8.411
19	19 2 18.72	2.6055	23 43 13.6	0.740	19	21 8 10.14	2.5928	19 56 42.2	8.558
20	19 4 55.13	2.6081	23 42 24.3	0.905	20	21 10 45.63	2.5900	19 48 4.3	8.706
21	19 7 31.69	2.6106	23 41 25.0	1.072	21	21 13 20.94	2.5869	19 39 17.5	8.852
22	19 10 8.40	2.6130	23 40 15.7	1.237	22	21 15 56.06	2.5838	19 30 22.1	8.995
23	19 12 45.25	2.6153	S. 23 38 56.5	1.402	23	21 18 31.00	2.5807	S. 19 21 18.1	9.138
SUNDAY 6.					TUESDAY 8.				
0	19 15 22.24	2.6175	S. 23 37 27.4	1.569	0	21 21 5.75	2.5775	S. 19 12 5.5	9.281
1	19 17 59.35	2.6194	23 35 48.2	1.737	1	21 23 40.30	2.5742	19 2 44.4	9.421
2	19 20 36.57	2.6212	23 33 59.0	1.903	2	21 26 14.65	2.5707	18 53 15.0	9.560
3	19 23 13.90	2.6230	23 31 59.8	2.071	3	21 28 48.79	2.5673	18 43 37.2	9.698
4	19 25 51.33	2.6247	23 29 50.5	2.239	4	21 31 22.73	2.5639	18 33 51.2	9.834
5	19 28 28.86	2.6262	23 27 31.1	2.407	5	21 33 56.46	2.5603	18 23 57.1	9.968
6	19 31 6.47	2.6275	23 25 1.7	2.574	6	21 36 29.97	2.5567	18 13 55.0	10.102
7	19 33 44.16	2.6287	23 22 22.2	2.742	7	21 39 3.26	2.5530	18 3 44.9	10.234
8	19 36 21.92	2.6298	23 19 32.6	2.910	8	21 41 36.33	2.5493	17 53 26.9	10.365
9	19 38 59.74	2.6308	23 16 33.0	3.078	9	21 44 9.18	2.5455	17 43 1.1	10.493
10	19 41 37.62	2.6317	23 13 23.2	3.247	10	21 46 41.79	2.5417	17 32 27.7	10.621
11	19 44 15.55	2.6324	23 10 3.3	3.415	11	21 49 14.18	2.5378	17 21 46.6	10.747
12	19 46 53.51	2.6330	23 6 33.4	3.582	12	21 51 46.33	2.5338	17 10 58.1	10.870
13	19 49 31.51	2.6335	23 2 53.4	3.751	13	21 54 18.24	2.5299	17 0 2.2	10.993
14	19 52 9.53	2.6337	22 59 3.3	3.919	14	21 56 49.92	2.5260	16 48 58.9	11.115
15	19 54 47.56	2.6340	22 55 3.1	4.087	15	21 59 21.36	2.5219	16 37 48.4	11.234
16	19 57 25.61	2.6341	22 50 52.9	4.253	16	22 1 52.55	2.5178	16 26 30.8	11.351
17	20 0 3.65	2.6340	22 46 32.7	4.421	17	22 4 23.50	2.5137	16 15 6.3	11.467
18	20 2 41.69	2.6339	22 42 2.4	4.587	18	22 6 54.20	2.5096	16 3 34.8	11.582
19	20 5 19.72	2.6337	22 37 22.2	4.754	19	22 9 24.65	2.5054	15 51 56.5	11.694
20	20 7 57.73	2.6332	22 32 31.9	4.921	20	22 11 54.85	2.5012	15 40 11.5	11.805
21	20 10 35.71	2.6327	22 27 31.7	5.086	21	22 14 24.80	2.4971	15 28 19.9	11.914
22	20 13 13.65	2.6320	22 22 21.6	5.251	22	22 16 54.50	2.4928	15 16 21.8	12.022
23	20 15 51.55	2.6312	22 17 1.6	5.416	23	22 19 23.94	2.4886	15 4 17.3	12.127
24	20 18 29.40	2.6303	S. 22 11 31.7	5.580	24	22 21 53.13	2.4843	S. 14 52 6.6	12.230

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 9.					FRIDAY 11.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	22 21 53.13	2.4843	S. 14 52 6.6	12.230	0	0 16 23.14	2.2969	S. 3 41 41.1	14.966
1	22 24 22.06	2.4801	14 39 49.7	12.332	1	0 18 40.86	2.2939	3 26 42.8	14.977
2	22 26 50.74	2.4758	14 27 26.8	12.432	2	0 20 58.41	2.2910	3 11 43.9	14.985
3	22 29 19.16	2.4715	14 14 57.9	12.530	3	0 23 15.78	2.2881	2 56 44.6	14.992
4	22 31 47.32	2.4672	14 2 23.2	12.627	4	0 25 32.98	2.2852	2 41 44.9	14.997
5	22 34 15.22	2.4629	13 49 42.7	12.721	5	0 27 50.01	2.2824	2 26 45.0	15.000
6	22 36 42.87	2.4586	13 36 56.7	12.813	6	0 30 6.87	2.2797	2 11 44.9	15.002
7	22 39 10.25	2.4542	13 24 5.1	12.904	7	0 32 23.57	2.2770	1 56 44.8	15.002
8	22 41 37.38	2.4500	13 11 8.2	12.993	8	0 34 40.11	2.2744	1 41 44.7	15.000
9	22 44 4.25	2.4457	12 58 6.0	13.080	9	0 36 56.50	2.2718	1 26 44.8	14.996
10	22 46 30.86	2.4413	12 44 58.6	13.165	10	0 39 12.73	2.2692	1 11 45.2	14.990
11	22 48 57.21	2.4370	12 31 46.2	13.247	11	0 41 28.81	2.2667	0 56 46.0	14.982
12	22 51 23.30	2.4327	12 18 28.9	13.328	12	0 43 44.74	2.2643	0 41 47.3	14.973
13	22 53 49.14	2.4285	12 5 6.8	13.408	13	0 46 0.53	2.2620	0 26 49.2	14.963
14	22 56 14.72	2.4242	11 51 39.9	13.487	14	0 48 16.18	2.2597	S. 0 11 51.7	14.952
15	22 58 40.05	2.4200	11 38 8.4	13.562	15	0 50 31.69	2.2574	N. 0 3 5.0	14.937
16	23 1 5.12	2.4157	11 24 32.5	13.634	16	0 52 47.07	2.2552	0 18 0.8	14.922
17	23 3 29.94	2.4116	11 10 52.3	13.706	17	0 55 2.31	2.2530	0 32 55.6	14.904
18	23 5 54.51	2.4074	10 57 7.8	13.776	18	0 57 17.43	2.2510	0 47 49.3	14.886
19	23 8 18.83	2.4032	10 43 19.2	13.843	19	0 59 32.43	2.2489	1 2 41.9	14.866
20	23 10 42.90	2.3991	10 29 26.6	13.909	20	1 1 47.30	2.2469	1 17 33.2	14.843
21	23 13 6.72	2.3949	10 15 30.1	13.973	21	1 4 2.06	2.2451	1 32 23.1	14.819
22	23 15 30.29	2.3908	10 1 29.8	14.035	22	1 6 16.71	2.2432	1 47 11.5	14.794
23	23 17 53.62	2.3867	S. 9 47 25.9	14.094	23	1 8 31.24	2.2413	N. 2 1 58.4	14.767
THURSDAY 10.					SATURDAY 12.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	23 20 16.70	2.3827	S. 9 33 18.5	14.152	0	1 10 45.66	2.2395	N. 2 16 43.6	14.739
1	23 22 39.54	2.3787	9 19 7.6	14.209	1	1 12 59.98	2.2378	2 31 27.1	14.709
2	23 25 2.14	2.3747	9 4 53.4	14.262	2	1 15 14.20	2.2362	2 46 8.7	14.677
3	23 27 24.51	2.3708	8 50 36.1	14.314	3	1 17 28.32	2.2346	3 0 48.4	14.644
4	23 29 46.64	2.3668	8 36 15.7	14.364	4	1 19 42.35	2.2330	3 15 26.0	14.610
5	23 32 8.53	2.3629	8 21 52.4	14.412	5	1 21 56.28	2.2314	3 30 1.6	14.574
6	23 34 30.19	2.3591	8 7 26.2	14.460	6	1 24 10.12	2.2300	3 44 34.9	14.537
7	23 36 51.62	2.3552	7 52 57.2	14.504	7	1 26 23.88	2.2287	3 59 6.0	14.498
8	23 39 12.82	2.3515	7 38 25.7	14.546	8	1 28 37.56	2.2273	4 13 34.7	14.457
9	23 41 33.80	2.3477	7 23 51.7	14.587	9	1 30 51.16	2.2260	4 28 0.9	14.416
10	23 43 54.55	2.3441	7 9 15.3	14.625	10	1 33 4.68	2.2247	4 42 24.6	14.373
11	23 46 15.09	2.3404	6 54 36.7	14.662	11	1 35 18.13	2.2236	4 56 45.7	14.328
12	23 48 35.40	2.3367	6 39 55.9	14.697	12	1 37 31.51	2.2224	5 11 4.0	14.282
13	23 50 55.50	2.3332	6 25 13.1	14.729	13	1 39 44.82	2.2213	5 25 19.5	14.235
14	23 53 15.39	2.3297	6 10 28.4	14.760	14	1 41 58.07	2.2203	5 39 32.2	14.187
15	23 55 35.06	2.3262	5 55 41.9	14.789	15	1 44 11.26	2.2193	5 53 41.9	14.136
16	23 57 54.53	2.3228	5 40 53.7	14.816	16	1 46 24.39	2.2183	6 7 48.5	14.085
17	0 0 13.80	2.3194	5 26 4.0	14.841	17	1 48 37.46	2.2174	6 21 52.1	14.032
18	0 2 32.86	2.3160	5 11 12.8	14.865	18	1 50 50.48	2.2166	6 35 52.4	13.978
19	0 4 51.72	2.3127	4 56 20.2	14.887	19	1 53 3.45	2.2158	6 49 49.5	13.923
20	0 7 10.39	2.3095	4 41 26.4	14.906	20	1 55 16.38	2.2151	7 3 43.2	13.866
21	0 9 28.86	2.3062	4 26 31.5	14.923	21	1 57 29.26	2.2143	7 17 33.4	13.808
22	0 11 47.14	2.3031	4 11 35.6	14.940	22	1 59 42.10	2.2137	7 31 20.2	13.750
23	0 14 5.23	2.3000	3 56 38.7	14.954	23	2 1 54.90	2.2131	7 45 3.4	13.689
24	0 16 23.14	2.2969	S. 3 41 41.1	14.966	24	2 4 7.67	2.2125	N. 7 58 42.9	13.627

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 13.					TUESDAY 15.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	2 4 7.67	2.2125	N. 7 58 42.9	13.627	0	3 50 21.68	2.2237	N. 17 21 47.8	9.487
1	2 6 20.40	2.2120	8 12 18.7	13.565	1	3 52 35.12	2.2244	17 31 13.9	9.382
2	2 8 33.11	2.2116	8 25 50.7	13.501	2	3 54 48.61	2.2251	17 40 33.6	9.276
3	2 10 45.79	2.2111	8 39 18.8	13.436	3	3 57 2.13	2.2257	17 49 47.0	9.169
4	2 12 58.44	2.2107	8 52 43.0	13.369	4	3 59 15.70	2.2265	17 58 53.9	9.061
5	2 15 11.07	2.2103	9 6 3.1	13.302	5	4 1 29.31	2.2271	18 7 54.3	8.952
6	2 17 23.68	2.2101	9 19 19.2	13.234	6	4 3 42.95	2.2277	18 16 48.2	8.844
7	2 19 36.28	2.2098	9 32 31.2	13.164	7	4 5 56.64	2.2285	18 25 35.6	8.735
8	2 21 48.86	2.2096	9 45 38.9	13.092	8	4 8 10.37	2.2292	18 34 16.4	8.625
9	2 24 1.43	2.2094	9 58 42.3	13.021	9	4 10 24.14	2.2298	18 42 50.6	8.515
10	2 26 13.99	2.2092	10 11 41.4	12.947	10	4 12 37.95	2.2304	18 51 18.2	8.405
11	2 28 26.54	2.2091	10 24 36.0	12.873	11	4 14 51.79	2.2311	18 59 39.2	8.293
12	2 30 39.08	2.2090	10 37 26.2	12.798	12	4 17 5.68	2.2317	19 7 53.4	8.181
13	2 32 51.62	2.2090	10 50 11.8	12.722	13	4 19 19.60	2.2323	19 16 0.9	8.069
14	2 35 4.16	2.2090	11 2 52.8	12.645	14	4 21 33.56	2.2330	19 24 1.7	7.957
15	2 37 16.70	2.2090	11 15 29.2	12.567	15	4 23 47.56	2.2337	19 31 55.7	7.843
16	2 39 29.24	2.2091	11 28 0.8	12.487	16	4 26 1.60	2.2342	19 39 42.9	7.729
17	2 41 41.79	2.2092	11 40 27.6	12.406	17	4 28 15.67	2.2347	19 47 23.2	7.615
18	2 43 54.35	2.2093	11 52 49.5	12.325	18	4 30 29.77	2.2353	19 54 56.7	7.502
19	2 46 6.91	2.2094	12 5 6.6	12.243	19	4 32 43.91	2.2359	20 2 23.4	7.387
20	2 48 19.48	2.2097	12 17 18.7	12.159	20	4 34 58.08	2.2364	20 9 43.1	7.271
21	2 50 32.07	2.2099	12 29 25.7	12.075	21	4 37 12.28	2.2369	20 16 55.9	7.156
22	2 52 44.67	2.2101	12 41 27.7	11.991	22	4 39 26.51	2.2374	20 24 1.8	7.040
23	2 54 57.28	2.2103	N. 12 53 24.6	11.904	23	4 41 40.77	2.2379	N. 20 31 0.7	6.923
MONDAY 14.					WEDNESDAY 16.				
0	2 57 9.91	2.2107	N. 13 5 16.2	11.817	0	4 43 55.06	2.2384	N. 20 37 52.6	6.807
1	2 59 22.56	2.2111	13 17 2.6	11.729	1	4 46 9.38	2.2388	20 44 37.5	6.690
2	3 1 35.24	2.2114	13 28 43.7	11.640	2	4 48 23.72	2.2392	20 51 15.4	6.572
3	3 3 47.93	2.2117	13 40 19.4	11.551	3	4 50 38.09	2.2397	20 57 46.2	6.455
4	3 6 0.65	2.2122	13 51 49.8	11.461	4	4 52 52.49	2.2401	21 4 10.0	6.337
5	3 8 13.39	2.2126	14 3 14.7	11.369	5	4 55 6.90	2.2403	21 10 26.6	6.218
6	3 10 26.16	2.2131	14 14 34.1	11.277	6	4 57 21.33	2.2407	21 16 36.2	6.101
7	3 12 38.96	2.2136	14 25 47.9	11.183	7	4 59 35.78	2.2410	21 22 38.7	5.982
8	3 14 51.79	2.2140	14 36 56.1	11.090	8	5 1 50.25	2.2413	21 28 34.0	5.862
9	3 17 4.64	2.2145	14 47 58.7	10.995	9	5 4 4.74	2.2416	21 34 22.1	5.742
10	3 19 17.53	2.2151	14 58 55.5	10.899	10	5 6 19.24	2.2417	21 40 3.1	5.624
11	3 21 30.45	2.2156	15 9 46.6	10.803	11	5 8 33.75	2.2419	21 45 37.0	5.504
12	3 23 43.40	2.2162	15 20 31.9	10.707	12	5 10 48.27	2.2421	21 51 3.6	5.383
13	3 25 56.39	2.2167	15 31 11.4	10.609	13	5 13 2.80	2.2422	21 56 23.0	5.263
14	3 28 9.41	2.2172	15 41 45.0	10.510	14	5 15 17.34	2.2423	22 1 35.2	5.143
15	3 30 22.46	2.2179	15 52 12.6	10.411	15	5 17 31.88	2.2423	22 6 40.2	5.023
16	3 32 35.56	2.2186	16 2 34.3	10.312	16	5 19 46.42	2.2423	22 11 38.0	4.902
17	3 34 48.69	2.2192	16 12 50.0	10.211	17	5 22 0.96	2.2423	22 16 28.5	4.782
18	3 37 1.86	2.2197	16 22 59.6	10.109	18	5 24 15.50	2.2423	22 21 11.8	4.661
19	3 39 15.06	2.2204	16 33 3.1	10.007	19	5 26 30.04	2.2423	22 25 47.8	4.539
20	3 41 28.31	2.2211	16 43 0.5	9.905	20	5 28 44.58	2.2422	22 30 16.5	4.418
21	3 43 41.59	2.2217	16 52 51.7	9.802	21	5 30 59.10	2.2420	22 34 38.0	4.297
22	3 45 54.91	2.2224	17 2 36.7	9.697	22	5 33 13.62	2.2419	22 38 52.2	4.176
23	3 48 8.28	2.2231	17 12 15.4	9.592	23	5 35 28.13	2.2417	22 42 59.1	4.054
24	3 50 21.68	2.2237	N. 17 21 47.8	9.487	24	5 37 42.62	2.2414	N. 22 46 58.7	3.932

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 17.					SATURDAY 19.				
0	5 37 42.62	2.2414	N.22 46 58.7	3.932	0	7 24 13.33	2.1803	N.23 36 37.6	1.797
1	5 39 57.10	2.2411	22 50 51.0	3.811	1	7 26 24.08	2.1781	23 34 46.4	1.909
2	5 42 11.55	2.2408	22 54 36.0	3.688	2	7 28 34.70	2.1758	23 32 48.5	2.022
3	5 44 25.99	2.2405	22 58 13.6	3.567	3	7 30 45.18	2.1734	23 30 43.8	2.134
4	5 46 40.41	2.2400	23 1 44.0	3.446	4	7 32 55.51	2.1710	23 28 32.4	2.246
5	5 48 54.79	2.2395	23 5 7.1	3.323	5	7 35 5.70	2.1687	23 26 14.3	2.357
6	5 51 9.15	2.2391	23 8 22.8	3.202	6	7 37 15.75	2.1662	23 23 49.5	2.468
7	5 53 23.48	2.2386	23 11 31.3	3.080	7	7 39 25.65	2.1637	23 21 18.1	2.579
8	5 55 37.78	2.2380	23 14 32.4	2.957	8	7 41 35.39	2.1612	23 18 40.0	2.690
9	5 57 52.04	2.2374	23 17 26.2	2.836	9	7 43 44.99	2.1587	23 15 55.3	2.799
10	6 0 6.27	2.2367	23 20 12.7	2.714	10	7 45 54.44	2.1562	23 13 4.1	2.908
11	6 2 20.45	2.2360	23 22 51.9	2.592	11	7 48 3.73	2.1535	23 10 6.3	3.017
12	6 4 34.59	2.2352	23 25 23.8	2.471	12	7 50 12.86	2.1508	23 7 2.0	3.126
13	6 6 48.68	2.2345	23 27 48.4	2.349	13	7 52 21.83	2.1482	23 3 51.2	3.233
14	6 9 2.73	2.2337	23 30 5.7	2.227	14	7 54 30.65	2.1456	23 0 34.0	3.341
15	6 11 16.73	2.2328	23 32 15.7	2.106	15	7 56 39.30	2.1428	22 57 10.3	3.448
16	6 13 30.67	2.2319	23 34 18.4	1.984	16	7 58 47.79	2.1401	22 53 40.2	3.555
17	6 15 44.56	2.2310	23 36 13.8	1.863	17	8 0 56.11	2.1373	22 50 3.7	3.661
18	6 17 58.39	2.2300	23 38 2.0	1.742	18	8 3 4.27	2.1346	22 46 20.9	3.766
19	6 20 12.16	2.2290	23 39 42.9	1.621	19	8 5 12.26	2.1318	22 42 31.8	3.871
20	6 22 25.87	2.2279	23 41 16.5	1.499	20	8 7 20.09	2.1290	22 38 36.4	3.975
21	6 24 39.51	2.2267	23 42 42.8	1.378	21	8 9 27.74	2.1261	22 34 34.8	4.079
22	6 26 53.08	2.2255	23 44 1.9	1.258	22	8 11 35.22	2.1232	22 30 26.9	4.183
23	6 29 6.57	2.2243	N.23 45 13.8	1.137	23	8 13 42.53	2.1203	N.22 26 12.8	4.286
FRIDAY 18.					SUNDAY 20.				
0	6 31 20.00	2.2232	N.23 46 18.4	1.017	0	8 15 49.66	2.1174	N.22 21 52.6	4.387
1	6 33 33.35	2.2218	23 47 15.8	0.897	1	8 17 56.62	2.1145	22 17 26.3	4.490
2	6 35 46.62	2.2204	23 48 6.0	0.777	2	8 20 3.40	2.1115	22 12 53.8	4.592
3	6 37 59.80	2.2190	23 48 49.0	0.657	3	8 22 10.00	2.1086	22 8 15.3	4.692
4	6 40 12.90	2.2177	23 49 24.9	0.537	4	8 24 16.43	2.1056	22 3 30.8	4.792
5	6 42 25.92	2.2162	23 49 53.5	0.417	5	8 26 22.67	2.1026	21 58 40.3	4.892
6	6 44 38.85	2.2147	23 50 15.0	0.299	6	8 28 28.74	2.0997	21 53 43.8	4.991
7	6 46 51.68	2.2131	23 50 29.4	0.181	7	8 30 34.63	2.0966	21 48 41.4	5.088
8	6 49 4.42	2.2115	23 50 36.7	+0.062	8	8 32 40.33	2.0935	21 43 33.2	5.187
9	6 51 17.06	2.2098	23 50 36.8	-0.057	9	8 34 45.85	2.0905	21 38 19.0	5.285
10	6 53 29.60	2.2082	23 50 29.9	0.174	10	8 36 51.19	2.0875	21 32 59.0	5.381
11	6 55 42.04	2.2065	23 50 15.9	0.292	11	8 38 56.35	2.0844	21 27 33.3	5.477
12	6 57 54.38	2.2047	23 49 54.8	0.410	12	8 41 1.32	2.0812	21 22 1.8	5.572
13	7 0 6.61	2.2028	23 49 26.7	0.527	13	8 43 6.10	2.0782	21 16 24.6	5.667
14	7 2 18.72	2.2010	23 48 51.5	0.645	14	8 45 10.70	2.0752	21 10 41.7	5.762
15	7 4 30.73	2.1992	23 48 9.3	0.761	15	8 47 15.12	2.0720	21 4 53.1	5.856
16	7 6 42.62	2.1972	23 47 20.2	0.877	16	8 49 19.34	2.0688	20 58 59.0	5.949
17	7 8 54.39	2.1952	23 46 24.0	0.994	17	8 51 23.38	2.0657	20 52 59.2	6.042
18	7 11 6.04	2.1932	23 45 20.9	1.109	18	8 53 27.23	2.0627	20 46 53.9	6.133
19	7 13 17.57	2.1912	23 44 10.9	1.224	19	8 55 30.90	2.0596	20 40 43.2	6.225
20	7 15 28.98	2.1891	23 42 54.0	1.339	20	8 57 34.38	2.0564	20 34 26.9	6.317
21	7 17 40.26	2.1870	23 41 30.2	1.454	21	8 59 37.67	2.0532	20 28 5.2	6.407
22	7 19 51.42	2.1848	23 39 59.5	1.568	22	9 1 40.77	2.0501	20 21 38.1	6.496
23	7 22 2.44	2.1826	23 38 22.0	1.682	23	9 3 43.68	2.0470	20 15 5.7	6.584
24	7 24 13.33	2.1803	N.23 36 37.6	1.797	24	9 5 46.41	2.0439	N.20 8 28.0	6.672

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for Minute.	Declination.	Diff. for Minute.	Hour.	Right Ascension.	Diff. for Minute.	Declination.	Diff. for Minute.
MONDAY 21.					WEDNESDAY 23.				
0	9 5 46.41	2.0439	N. 20 8 28.0	6.672	0	10 40 27.92	1.9089	N. 13 18 43.4	10.144
1	9 7 48.95	2.0407	20 1 45.0	6.761	1	10 42 22.39	1.9067	13 8 33.1	10.200
2	9 9 51.30	2.0376	19 54 56.7	6.848	2	10 44 16.72	1.9045	12 58 19.4	10.255
3	9 11 53.46	2.0345	19 48 3.2	6.934	3	10 46 10.93	1.9024	12 48 2.5	10.309
4	9 13 55.44	2.0314	19 41 4.6	7.019	4	10 48 5.01	1.9002	12 37 42.3	10.363
5	9 15 57.23	2.0282	19 34 0.9	7.105	5	10 49 58.96	1.8981	12 27 18.9	10.417
6	9 17 58.83	2.0251	19 26 52.0	7.190	6	10 51 52.78	1.8961	12 16 52.3	10.469
7	9 20 0.24	2.0220	19 19 38.1	7.274	7	10 53 46.49	1.8941	12 6 22.6	10.520
8	9 22 1.47	2.0189	19 12 19.1	7.357	8	10 55 40.07	1.8921	11 55 49.9	10.571
9	9 24 2.51	2.0158	19 4 55.2	7.439	9	10 57 33.54	1.8902	11 45 14.1	10.622
10	9 26 3.37	2.0127	18 57 26.4	7.522	10	10 59 26.89	1.8882	11 34 35.3	10.672
11	9 28 4.04	2.0097	18 49 52.6	7.603	11	11 1 20.13	1.8864	11 23 53.5	10.720
12	9 30 4.53	2.0067	18 42 14.0	7.683	12	11 3 13.26	1.8846	11 13 8.9	10.767
13	9 32 4.84	2.0036	18 34 30.6	7.763	13	11 5 6.28	1.8828	11 2 21.4	10.816
14	9 34 4.96	2.0005	18 26 42.4	7.843	14	11 6 59.20	1.8811	10 51 31.0	10.863
15	9 36 4.90	1.9975	18 18 49.4	7.922	15	11 8 52.01	1.8793	10 40 37.8	10.909
16	9 38 4.66	1.9944	18 10 51.8	7.999	16	11 10 44.72	1.8777	10 29 41.9	10.954
17	9 40 4.23	1.9914	18 2 49.5	8.077	17	11 12 37.33	1.8761	10 18 43.3	10.999
18	9 42 3.63	1.9885	17 54 42.6	8.153	18	11 14 29.85	1.8745	10 7 42.0	11.043
19	9 44 2.85	1.9855	17 46 31.1	8.230	19	11 16 22.27	1.8728	9 56 38.1	11.087
20	9 46 1.89	1.9826	17 38 15.0	8.306	20	11 18 14.59	1.8713	9 45 31.6	11.130
21	9 48 0.76	1.9797	17 29 54.4	8.380	21	11 20 6.83	1.8699	9 34 22.6	11.171
22	9 49 59.45	1.9767	17 21 29.4	8.454	22	11 21 58.98	1.8685	9 23 11.1	11.212
23	9 51 57.97	1.9738	N. 17 12 59.9	8.527	23	11 23 51.05	1.8672	N. 9 11 57.1	11.253
TUESDAY 22.					THURSDAY 24.				
0	9 53 56.31	1.9709	N. 17 4 26.1	8.600	0	11 25 43.04	1.8658	N. 9 0 40.7	11.292
1	9 55 54.48	1.9681	16 55 47.9	8.672	1	11 27 34.95	1.8645	8 49 22.0	11.332
2	9 57 52.48	1.9652	16 47 5.4	8.743	2	11 29 26.78	1.8632	8 38 0.9	11.371
3	9 59 50.30	1.9623	16 38 18.7	8.814	3	11 31 18.54	1.8621	8 26 37.5	11.408
4	10 1 47.96	1.9596	16 29 27.7	8.885	4	11 33 10.23	1.8609	8 15 11.9	11.445
5	10 3 45.45	1.9568	16 20 32.5	8.954	5	11 35 1.85	1.8597	8 3 44.1	11.482
6	10 5 42.78	1.9541	16 11 33.2	9.022	6	11 36 53.40	1.8587	7 52 14.1	11.517
7	10 7 39.94	1.9513	16 2 29.8	9.090	7	11 38 44.89	1.8577	7 40 42.0	11.552
8	10 9 36.93	1.9486	15 53 22.4	9.157	8	11 40 36.32	1.8567	7 29 7.8	11.587
9	10 11 33.77	1.9459	15 44 10.9	9.225	9	11 42 27.69	1.8557	7 17 31.6	11.620
10	10 13 30.44	1.9432	15 34 55.4	9.291	10	11 44 19.00	1.8548	7 5 53.4	11.653
11	10 15 26.95	1.9406	15 25 36.0	9.356	11	11 46 10.27	1.8540	6 54 13.2	11.686
12	10 17 23.31	1.9380	15 16 12.7	9.421	12	11 48 1.48	1.8532	6 42 31.1	11.717
13	10 19 19.51	1.9354	15 6 45.5	9.485	13	11 49 52.65	1.8524	6 30 47.2	11.747
14	10 21 15.56	1.9328	14 57 14.5	9.548	14	11 51 43.77	1.8517	6 19 1.4	11.777
15	10 23 11.45	1.9303	14 47 39.7	9.611	15	11 53 34.85	1.8510	6 7 13.9	11.807
16	10 25 7.20	1.9278	14 38 1.2	9.672	16	11 55 25.89	1.8504	5 55 24.6	11.835
17	10 27 2.79	1.9252	14 28 19.0	9.734	17	11 57 16.90	1.8498	5 43 33.7	11.862
18	10 28 58.23	1.9228	14 18 33.1	9.794	18	11 59 7.87	1.8493	5 31 41.1	11.890
19	10 30 53.53	1.9205	14 8 43.6	9.854	19	12 0 58.82	1.8489	5 19 46.9	11.916
20	10 32 48.69	1.9182	13 58 50.6	9.913	20	12 2 49.74	1.8484	5 7 51.2	11.942
21	10 34 43.71	1.9157	13 48 54.0	9.972	21	12 4 40.63	1.8480	4 55 53.9	11.967
22	10 36 38.58	1.9134	13 38 53.9	10.030	22	12 6 31.50	1.8477	4 43 55.1	11.991
23	10 38 33.32	1.9112	13 28 50.4	10.087	23	12 8 22.36	1.8475	4 31 55.0	12.014
24	10 40 27.92	1.9089	N. 13 18 43.4	10.144	24	12 10 13.20	1.8472	N. 4 19 53.4	12.037

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 25.					SUNDAY 27.				
0	12 10 13.20	1.8472	N. 4 19 53.4	12.037	0	13 39 36.32	1.8977	S. 5 29 48.4	12.232
1	12 12 4.02	1.8470	4 7 50.5	12.059	1	13 41 30.25	1.9000	5 42 1.9	12.217
2	12 13 54.84	1.8470	3 55 46.3	12.081	2	13 43 24.32	1.9024	5 54 14.4	12.200
3	12 15 45.66	1.8469	3 43 40.8	12.102	3	13 45 18.54	1.9049	6 6 25.9	12.183
4	12 17 36.47	1.8468	3 31 34.1	12.121	4	13 47 12.91	1.9074	6 18 36.4	12.165
5	12 19 27.28	1.8468	3 19 26.3	12.140	5	13 49 7.43	1.9100	6 30 45.7	12.146
6	12 21 18.09	1.8469	3 7 17.3	12.159	6	13 51 2.11	1.9127	6 42 53.9	12.126
7	12 23 8.91	1.8470	2 55 7.2	12.177	7	13 52 56.95	1.9153	6 55 0.8	12.104
8	12 24 59.73	1.8472	2 42 56.1	12.193	8	13 54 51.95	1.9181	7 7 6.4	12.082
9	12 26 50.57	1.8475	2 30 44.0	12.209	9	13 56 47.12	1.9210	7 19 10.7	12.060
10	12 28 41.43	1.8477	2 18 31.0	12.224	10	13 58 42.47	1.9239	7 31 13.6	12.037
11	12 30 32.30	1.8480	2 6 17.1	12.238	11	14 0 37.99	1.9267	7 43 15.1	12.012
12	12 32 23.19	1.8484	1 54 2.4	12.252	12	14 2 33.68	1.9297	7 55 15.1	11.987
13	12 34 14.11	1.8489	1 41 46.8	12.266	13	14 4 29.55	1.9327	8 7 13.5	11.961
14	12 36 5.06	1.8493	1 29 30.5	12.278	14	14 6 25.61	1.9358	8 19 10.4	11.934
15	12 37 56.03	1.8498	1 17 13.4	12.290	15	14 8 21.85	1.9389	8 31 5.6	11.905
16	12 39 47.04	1.8505	1 4 55.7	12.301	16	14 10 18.28	1.9422	8 42 59.0	11.876
17	12 41 38.09	1.8512	0 52 37.3	12.311	17	14 12 14.91	1.9454	8 54 50.7	11.847
18	12 43 29.18	1.8518	0 40 18.4	12.320	18	14 14 11.73	1.9487	9 6 40.6	11.816
19	12 45 20.31	1.8526	0 27 58.9	12.329	19	14 16 8.75	1.9520	9 18 28.6	11.784
20	12 47 11.49	1.8533	0 15 38.9	12.337	20	14 18 5.97	1.9554	9 30 14.7	11.752
21	12 49 2.71	1.8542	N. 0 3 18.5	12.343	21	14 20 3.40	1.9589	9 41 58.8	11.717
22	12 50 53.99	1.8552	S. 0 9 2.3	12.350	22	14 22 1.04	1.9624	9 53 40.8	11.682
23	12 52 45.33	1.8561	S. 0 21 23.5	12.356	23	14 23 58.89	1.9660	S. 10 5 20.7	11.647
SATURDAY 26.					MONDAY 28.				
0	12 54 36.72	1.8571	S. 0 33 45.0	12.360	0	14 25 56.96	1.9696	S. 10 16 58.4	11.610
1	12 56 28.18	1.8582	0 46 6.7	12.364	1	14 27 55.24	1.9732	10 28 33.9	11.573
2	12 58 19.70	1.8592	0 58 28.7	12.367	2	14 29 53.75	1.9770	10 40 7.2	11.535
3	13 0 11.29	1.8604	1 10 50.8	12.369	3	14 31 52.48	1.9807	10 51 38.1	11.495
4	13 2 2.95	1.8616	1 23 13.0	12.371	4	14 33 51.43	1.9845	11 3 6.6	11.455
5	13 3 54.68	1.8629	1 35 35.3	12.372	5	14 35 50.62	1.9884	11 14 32.7	11.414
6	13 5 46.50	1.8643	1 47 57.6	12.372	6	14 37 50.04	1.9922	11 25 56.3	11.372
7	13 7 38.40	1.8657	2 0 19.9	12.371	7	14 39 49.69	1.9962	11 37 17.3	11.328
8	13 9 30.38	1.8671	2 12 42.1	12.369	8	14 41 49.59	2.0003	11 48 35.7	11.284
9	13 11 22.45	1.8686	2 25 4.2	12.367	9	14 43 49.73	2.0043	11 59 51.4	11.238
10	13 13 14.61	1.8702	2 37 26.2	12.364	10	14 45 50.11	2.0084	12 11 4.3	11.192
11	13 15 6.87	1.8717	2 49 47.9	12.360	11	14 47 50.74	2.0126	12 22 14.4	11.145
12	13 16 59.22	1.8733	3 2 9.4	12.355	12	14 49 51.62	2.0167	12 33 21.7	11.097
13	13 18 51.67	1.8751	3 14 30.5	12.349	13	14 51 52.75	2.0210	12 44 26.0	11.047
14	13 20 44.23	1.8769	3 26 51.3	12.343	14	14 53 54.14	2.0253	12 55 27.4	10.997
15	13 22 36.90	1.8787	3 39 11.7	12.337	15	14 55 55.79	2.0297	13 6 25.7	10.946
16	13 24 29.68	1.8807	3 51 31.7	12.328	16	14 57 57.70	2.0341	13 17 20.9	10.893
17	13 26 22.58	1.8826	4 3 51.1	12.318	17	14 59 59.88	2.0385	13 28 12.9	10.839
18	13 28 15.59	1.8845	4 16 9.9	12.308	18	15 2 2.32	2.0429	13 39 1.6	10.785
19	13 30 8.72	1.8866	4 28 28.1	12.298	19	15 4 5.03	2.0475	13 49 47.1	10.730
20	13 32 1.98	1.8887	4 40 45.7	12.287	20	15 6 8.02	2.0521	14 0 29.2	10.673
21	13 33 55.36	1.8908	4 53 2.6	12.275	21	15 8 11.28	2.0567	14 11 7.9	10.616
22	13 35 48.88	1.8931	5 5 18.7	12.262	22	15 10 14.82	2.0613	14 21 43.1	10.557
23	13 37 42.53	1.8953	5 17 34.0	12.247	23	15 12 18.64	2.0660	14 32 14.8	10.497
24	13 39 36.32	1.8977	S. 5 29 48.4	12.232	24	15 14 22.74	2.0707	S. 14 42 42.8	10.437

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 29.					THURSDAY, OCTOBER 1.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	15 14 22.74	2.0707	S. 14 42 42.8	10.437	0	16 59 45.74	2.3255	S. 21 32 40.0	6.209
1	15 16 27.13	2.0755	14 53 7.2	10.375	PHASES OF THE MOON.				
2	15 18 31.80	2.0802	15 3 27.8	10.312					
3	15 20 36.76	2.0851	15 13 44.6	10.247					
4	15 22 42.01	2.0900	15 23 57.5	10.183					
5	15 24 47.56	2.0950	15 34 6.6	10.117					
6	15 26 53.41	2.0999	15 44 11.6	10.049					
7	15 28 59.55	2.1048	15 54 12.5	9.981					
8	15 31 5.99	2.1099	16 4 9.3	9.912					
9	15 33 12.74	2.1150	16 14 1.9	9.842					
10	15 35 19.79	2.1201	16 23 50.3	9.770					
11	15 37 27.15	2.1252	16 33 34.3	9.697	First Quarter . . . Sept. 3 8 50.8 Full Moon 10 0 23.3 Last Quarter 16 22 33.4 New Moon 25 2 59.4				
12	15 39 34.81	2.1302	16 43 14.0	9.624					
13	15 41 42.78	2.1355	16 52 49.2	9.548					
14	15 43 51.07	2.1407	17 2 19.8	9.472					
15	15 45 59.67	2.1459	17 11 45.8	9.395	Perigee Sept. 9 7.8 Apogee 22 0.0				
16	15 48 8.58	2.1513	17 21 7.2	9.317					
17	15 50 17.82	2.1566	17 30 23.8	9.237					
18	15 52 27.37	2.1618	17 39 35.7	9.157					
19	15 54 37.23	2.1671	17 48 42.7	9.075					
20	15 56 47.42	2.1725	17 57 44.7	8.992					
21	15 58 57.93	2.1779	18 6 41.7	8.908					
22	16 1 8.77	2.1833	18 15 33.7	8.823					
23	16 3 19.93	2.1887	S. 18 24 20.5	8.737					
WEDNESDAY 30.									
0	16 5 31.41	2.1941	S. 18 33 2.2	8.650					
1	16 7 43.22	2.1996	18 41 38.5	8.561					
2	16 9 55.36	2.2050	18 50 9.5	8.472					
3	16 12 7.82	2.2105	18 58 35.1	8.381					
4	16 14 20.62	2.2160	19 6 55.2	8.289					
5	16 16 33.74	2.2214	19 15 9.8	8.196					
6	16 18 47.19	2.2269	19 23 18.7	8.101					
7	16 21 0.97	2.2325	19 31 21.9	8.006					
8	16 23 15.09	2.2380	19 39 19.4	7.910					
9	16 25 29.53	2.2434	19 47 11.1	7.812					
10	16 27 44.30	2.2489	19 54 56.8	7.712					
11	16 29 59.40	2.2545	20 2 36.6	7.613					
12	16 32 14.84	2.2601	20 10 10.4	7.512					
13	16 34 30.61	2.2655	20 17 38.1	7.410					
14	16 36 46.70	2.2710	20 24 59.6	7.306					
15	16 39 3.13	2.2766	20 32 14.8	7.201					
16	16 41 19.89	2.2820	20 39 23.7	7.096					
17	16 43 36.97	2.2875	20 46 26.3	6.989					
18	16 45 54.39	2.2930	20 53 22.4	6.881					
19	16 48 12.13	2.2984	21 0 12.0	6.772					
20	16 50 30.20	2.3039	21 6 55.0	6.662					
21	16 52 48.60	2.3093	21 13 31.4	6.551					
22	16 55 7.32	2.3147	21 20 1.1	6.438					
23	16 57 26.37	2.3202	21 26 24.0	6.324					
24	16 59 45.74	2.3255	S. 21 32 40.0	6.209					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
1	SUN W.	61 52 9	3183	63 18 38	3170	64 45 23	3157	66 12 24	3144
	Spica W.	18 50 32	3105	20 18 35	3056	21 47 39	3012	23 17 38	2973
	α Aquilæ E.	79 23 30	3545	78 3 55	3543	76 44 17	3541	75 24 38	3539
	Fomalhaut E.	112 5 36	3033	110 36 4	3018	109 6 13	3002	107 36 3	2987
2	SUN W.	73 31 30	3074	75 0 11	3059	76 29 10	3044	77 58 28	3029
	Spica W.	30 58 5	2830	32 31 53	2807	34 6 12	2785	35 41 0	2764
	α Aquilæ E.	68 46 24	3550	67 26 55	3557	66 7 33	3565	64 48 20	3575
	Fomalhaut E.	100 0 21	2910	98 28 15	2895	96 55 49	2880	95 23 4	2865
	α Pegasi E.	116 5 7	3225	114 39 28	3199	113 13 18	3174	111 46 38	3149
3	SUN W.	85 29 49	2949	87 1 6	2932	88 32 44	2915	90 4 43	2898
	Spica W.	43 41 45	2665	45 19 12	2646	46 57 5	2627	48 35 23	2608
	α Aquilæ E.	58 15 38	3657	56 58 5	3682	55 40 59	3711	54 24 23	3744
	Fomalhaut E.	87 34 28	2790	85 59 46	2775	84 24 46	2760	82 49 26	2746
	α Pegasi E.	104 26 1	3034	102 56 31	3013	101 26 34	2993	99 56 12	2973
	SATURN E.	122 42 43	2585	121 3 28	2570	119 23 52	2555	117 43 55	2539
4	SUN W.	97 50 9	2811	99 24 22	2793	100 58 58	2775	102 33 58	2758
	Spica W.	56 53 16	2517	58 34 7	2499	60 15 22	2480	61 57 3	2462
	Fomalhaut E.	74 48 5	2677	73 10 54	2664	71 33 25	2652	69 55 40	2640
	α Pegasi E.	92 18 15	2880	90 45 30	2863	89 12 24	2847	87 38 56	2831
	SATURN E.	109 18 32	2457	107 36 18	2441	105 53 41	2424	104 10 39	2407
5	SUN W.	110 34 47	2670	112 12 8	2653	113 49 51	2635	115 27 58	2618
	Spica W.	70 31 49	2373	72 16 2	2356	74 0 39	2339	75 45 42	2322
	Antares W.	24 58 40	2496	26 39 59	2462	28 22 6	2430	30 4 58	2401
	Fomalhaut E.	61 43 5	2589	60 3 54	2581	58 24 33	2574	56 45 2	2569
	α Pegasi E.	79 46 48	2762	78 11 30	2751	76 35 58	2741	75 0 13	2732
	SATURN E.	95 29 32	2323	93 44 6	2306	91 58 15	2290	90 12 1	2273
	α Arietis E.	122 45 9	2527	121 4 33	2504	119 23 25	2482	117 41 45	2460
6	Spica W.	84 37 0	2241	86 24 27	2226	88 12 16	2211	90 0 28	2196
	Antares W.	38 48 50	2282	40 35 17	2262	42 22 13	2242	44 9 38	2223
	Fomalhaut E.	48 26 24	2568	46 46 45	2574	45 7 15	2584	43 27 58	2598
	α Pegasi E.	66 58 53	2704	65 22 19	2704	63 45 44	2705	62 9 11	2709
	SATURN E.	81 14 49	2194	79 26 12	2179	77 37 13	2164	75 47 51	2150
	α Arietis E.	109 5 58	2359	107 21 24	2341	105 36 24	2324	103 50 59	2307
7	Spica W.	99 6 42	2130	100 56 56	2118	102 47 27	2107	104 38 15	2096
	Antares W.	53 13 16	2142	55 3 11	2128	56 53 27	2115	58 44 3	2102
	α Pegasi E.	54 8 40	2766	52 33 27	2788	50 58 44	2815	49 24 35	2846
	SATURN E.	66 35 43	2083	64 44 18	2071	62 52 34	2060	61 0 33	2049
	α Arietis E.	94 58 0	2233	93 10 21	2220	91 22 23	2208	89 34 8	2197
	Aldebaran E.	126 12 23	2111	124 21 40	2098	122 30 37	2085	120 39 15	2073
8	Antares W.	68 1 33	2050	69 53 49	2042	71 46 17	2035	73 38 57	2028
	SATURN E.	51 36 32	2004	49 43 4	1997	47 49 25	1991	45 55 36	1986
	α Arietis E.	80 29 9	2156	78 39 34	2150	76 49 51	2145	75 0 1	2141
	Aldebaran E.	111 18 21	2026	109 25 27	2019	107 32 22	2012	105 39 6	2006
9	Antares W.	83 4 27	2007	84 57 50	2005	86 51 16	2005	88 44 43	2005

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
1	SUN	W.	67 39 40	3131	69 7 12	3117	70 35 1	3103	72 3 7	3089
	Spica	W.	24 48 25	2939	26 19 55	2908	27 52 3	2880	29 24 47	2854
	α Aquilæ	E.	74 4 57	3539	72 45 16	3540	71 25 36	3542	70 5 58	3545
	Fomalhaut	E.	106 5 34	2971	104 34 45	2955	103 3 36	2940	101 32 8	2925
2	SUN	W.	79 28 5	3013	80 58 1	2997	82 28 17	2981	83 58 53	2965
	Spica	W.	37 16 15	2743	38 51 58	2723	40 28 7	2703	42 4 43	2684
	α Aquilæ	E.	63 29 17	3586	62 10 27	3600	60 51 52	3616	59 33 35	3635
	Fomalhaut	E.	93 50 0	2850	92 16 36	2835	90 42 53	2820	89 8 50	2805
	α Pegasi	E.	110 19 28	3125	108 51 49	3101	107 23 41	3078	105 55 5	3056
3	SUN	W.	91 37 4	2882	93 9 46	2864	94 42 51	2846	96 16 19	2829
	Spica	W.	50 14 7	2590	51 53 16	2571	53 32 51	2553	55 12 51	2535
	α Aquilæ	E.	53 8 22	3782	51 53 1	3824	50 38 24	3874	49 24 37	3930
	Fomalhaut	E.	81 13 47	2732	79 37 49	2718	78 1 33	2704	76 24 58	2690
	α Pegasi	E.	98 25 25	2953	96 54 13	2934	95 22 37	2916	93 50 38	2898
	SATURN	E.	116 3 36	2522	114 22 54	2507	112 41 50	2490	111 0 23	2473
4	SUN	W.	104 9 21	2740	105 45 7	2722	107 21 17	2705	108 57 50	2687
	Spica	W.	63 39 10	2444	65 21 42	2426	67 4 39	2409	68 48 1	2391
	Fomalhaut	E.	68 17 39	2628	66 39 22	2617	65 0 50	2607	63 22 4	2597
	α Pegasi	E.	86 5 8	2815	84 31 0	2801	82 56 34	2788	81 21 50	2775
	SATURN	E.	102 27 14	2390	100 43 25	2373	98 59 12	2356	97 14 34	2339
5	SUN	W.	117 6 29	2601	118 45 22	2585	120 24 38	2568	122 4 17	2551
	Spica	W.	77 31 9	2305	79 17 1	2289	81 3 17	2273	82 49 57	2257
	Antares	W.	31 48 31	2374	33 32 43	2349	35 17 31	2325	37 2 54	2302
	Fomalhaut	E.	55 5 25	2565	53 25 42	2563	51 45 56	2562	50 6 9	2564
	α Pegasi	E.	73 24 15	2723	71 48 6	2716	70 11 48	2711	68 35 23	2707
	SATURN	E.	88 25 22	2257	86 38 19	2241	84 50 53	2225	83 3 3	2209
	α Arietis	E.	115 59 35	2438	114 16 54	2417	112 33 44	2397	110 50 5	2378
6	Spica	W.	91 49 1	2182	93 37 56	2169	95 27 11	2155	97 16 47	2142
	Antares	W.	45 57 31	2206	47 45 50	2189	49 34 35	2173	51 23 44	2157
	Fomalhaut	E.	41 49 0	2615	40 10 26	2638	38 32 23	2667	36 54 59	2701
	α Pegasi	E.	60 32 43	2715	58 56 22	2723	57 20 12	2734	55 44 17	2748
	SATURN	E.	73 58 7	2136	72 8 2	2122	70 17 36	2109	68 26 49	2096
	α Arietis	E.	102 5 9	2290	100 18 55	2274	98 32 18	2260	96 45 19	2246
7	Spica	W.	106 29 20	2086	108 20 40	2077	110 12 14	2069	112 4 1	2062
	Antares	W.	60 34 59	2090	62 26 13	2079	64 17 44	2069	66 9 31	2059
	α Pegasi	E.	47 51 5	2883	46 18 23	2927	44 46 39	2978	43 16 0	3037
	SATURN	E.	59 8 15	2039	57 15 41	2029	55 22 52	2020	53 29 49	2011
	α Arietis	E.	87 45 36	2187	85 56 49	2178	84 7 48	2170	82 18 34	2162
	Aldebaran	E.	118 47 35	2063	116 55 39	2053	115 3 28	2044	113 11 2	2035
8	Antares	W.	75 31 48	2022	77 24 48	2018	79 17 55	2014	81 11 8	2010
	SATURN	E.	44 1 38	1981	42 7 33	1977	40 13 21	1973	38 19 4	1971
	α Arietis	E.	73 10 5	2139	71 20 5	2138	69 30 4	2138	67 40 3	2139
	Aldebaran	E.	103 45 41	2000	101 52 7	1996	99 58 26	1992	98 4 39	1989
9	Antares	W.	90 38 10	2005	92 31 36	2007	94 24 59	2010	96 18 18	2013

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
9	α Aquilæ W.	45 8 52	3637	46 26 46	3533	47 46 34	3439	49 8 7	3356
	SATURN E.	36 24 44	1969	34 30 21	1969	32 35 58	1970	30 41 36	1971
	α Arietis E.	65 50 4	2142	64 0 9	2146	62 10 19	2151	60 20 37	2157
	Aldebaran E.	96 10 47	1986	94 16 51	1985	92 22 53	1984	90 28 53	1984
10	Antares W.	98 11 32	2017	100 4 39	2022	101 57 39	2028	103 50 30	2035
	α Aquilæ W.	56 16 34	3062	57 45 30	3083	59 15 14	2989	60 45 41	2958
	α Arietis E.	51 15 29	2217	49 27 26	2235	47 39 51	2256	45 52 46	2279
	Aldebaran E.	80 59 23	1996	79 5 43	2001	77 12 10	2007	75 18 46	2013
	Pollux E.	125 6 1	2012	123 12 45	2016	121 19 35	2020	119 26 32	2025
11	α Aquilæ W.	68 25 43	2866	69 58 45	2858	71 31 58	2852	73 5 20	2848
	Fomalhaut W.	33 0 31	2723	34 36 40	2672	36 13 58	2630	37 52 12	2597
	α Arietis E.	37 7 25	2449	35 25 0	2498	33 43 44	2554	32 3 46	2620
	Aldebaran E.	65 54 39	2056	64 2 32	2068	62 10 43	2079	60 19 10	2090
	Pollux E.	110 3 48	2064	108 11 54	2075	106 20 16	2085	104 28 54	2096
12	α Aquilæ W.	80 52 17	2863	82 25 23	2872	83 58 17	2883	85 30 57	2895
	Fomalhaut W.	46 12 6	2512	47 53 3	2506	49 34 8	2503	51 15 17	2503
	α Pegasi W.	34 31 4	3710	35 47 40	3592	37 6 23	3490	38 26 58	3403
	Aldebaran E.	51 6 26	2160	49 16 59	2176	47 27 56	2193	45 39 18	2210
	Pollux E.	95 16 46	2163	93 27 23	2178	91 38 22	2194	89 49 44	2210
13	α Aquilæ W.	93 9 42	2981	94 40 18	3002	96 10 28	3025	97 40 9	3050
	Fomalhaut W.	59 40 12	2530	61 20 44	2539	63 1 4	2549	64 41 9	2562
	α Pegasi W.	45 30 4	3137	46 57 29	3106	48 25 31	3081	49 54 4	3060
	SATURN W.	23 40 1	2277	25 26 34	2292	27 12 45	2308	28 58 33	2325
	Aldebaran E.	36 42 38	2302	34 56 41	2322	33 11 14	2343	31 26 17	2364
	Pollux E.	80 52 45	2295	79 6 38	2313	77 20 57	2331	75 35 43	2350
	JUPITER E.	118 31 52	2353	116 47 10	2372	115 2 55	2390	113 19 6	2408
14	α Aquilæ W.	105 0 32	3193	106 26 50	3225	107 52 30	3259	109 17 30	3295
	Fomalhaut W.	72 57 12	2630	74 35 26	2646	76 13 18	2662	77 50 50	2678
	α Pegasi W.	57 21 31	3012	58 51 29	3009	60 21 30	3009	61 51 31	3012
	SATURN W.	37 41 18	2413	39 24 34	2431	41 7 25	2449	42 49 50	2467
	Pollux E.	66 56 20	2445	65 13 50	2465	63 31 47	2485	61 50 12	2504
	JUPITER E.	104 46 34	2502	103 5 24	2521	101 24 40	2540	99 44 23	2559
	SUN E.	125 28 46	2771	123 53 40	2791	122 19 0	2811	120 44 46	2830
15	Fomalhaut W.	85 52 51	2765	87 28 5	2782	89 2 56	2800	90 37 24	2818
	α Pegasi W.	69 20 21	3042	70 49 42	3052	72 18 51	3061	73 47 48	3071
	SATURN W.	51 15 31	2559	52 55 23	2577	54 34 50	2595	56 13 52	2612
	α Arietis W.	26 0 4	3330	27 23 41	3369	28 48 28	3220	30 14 13	3181
	Pollux E.	53 29 5	2601	51 50 12	2621	50 11 46	2641	48 33 47	2660
	JUPITER E.	91 29 30	2655	89 51 49	2673	88 14 33	2692	86 37 42	2710
	SUN E.	112 59 57	2929	111 28 15	2948	109 56 57	2967	108 26 3	2977
16	Fomalhaut W.	98 23 49	2909	99 55 56	2928	101 27 39	2946	102 58 59	2965
	α Pegasi W.	81 9 6	3133	82 36 36	3147	84 3 49	3160	85 30 46	3174
	SATURN W.	64 23 13	2698	65 59 56	2713	67 36 18	2729	69 12 19	2745
	α Arietis W.	37 31 52	3081	39 0 24	3074	40 29 5	3069	41 57 53	3066
	Pollux E.	40 30 19	2757	38 54 54	2776	37 19 55	2795	35 45 21	2815

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
9	α Aquilæ W.	50 31 14	3282	51 55 46	3217	53 21 35	3159	54 48 33	3107
	SATURN E.	28 47 16	1974	26 53 0	1978	24 58 51	1983	23 4 51	1989
	α Arietis E.	58 31 5	2165	56 41 45	2175	54 52 41	2188	53 3 55	2202
	Aldebaran E.	88 34 54	1985	86 40 56	1987	84 47 1	1989	82 53 10	1992
10	Antares W.	105 43 10	2042	107 35 38	2051	109 27 53	2060	111 19 54	2069
	α Aquilæ W.	62 16 46	2932	63 48 23	2911	65 20 28	2893	66 52 56	2878
	α Arietis E.	44 6 14	2305	42 20 21	2335	40 35 12	2368	38 50 52	2406
	Aldebaran E.	73 25 32	2020	71 32 29	2028	69 39 39	2037	67 47 2	2046
	Pollux E.	117 33 37	2032	115 40 52	2039	113 48 18	2046	111 55 56	2055
11	α Aquilæ W.	74 38 46	2847	76 12 13	2848	77 45 39	2851	79 19 1	2856
	Fomalhaut W.	39 31 11	2570	41 10 47	2549	42 50 53	2533	44 31 21	2521
	α Arietis E.	30 25 18	2695	28 48 32	2722	27 13 41	2886	25 41 5	3014
	Aldebaran E.	58 27 56	2103	56 37 2	2117	54 46 29	2131	52 56 17	2145
	Pollux E.	102 37 49	2109	100 47 3	2122	98 56 37	2135	97 6 31	2149
12	α Aquilæ W.	87 3 22	2909	88 35 28	2925	90 7 15	2942	91 38 40	2961
	Fomalhaut W.	52 56 26	2505	54 37 33	2509	56 18 34	2514	57 59 28	2521
	α Pegasi W.	39 49 11	3330	41 12 47	3369	42 37 34	3218	44 3 23	3174
	Aldebaran E.	43 51 4	2227	42 3 16	2245	40 15 56	2264	38 29 3	2283
	Pollux E.	88 1 31	2226	86 13 42	2243	84 26 18	2260	82 39 19	2277
13	α Aquilæ W.	99 9 20	3076	100 37 59	3103	102 6 5	3132	103 33 37	3162
	Fomalhaut W.	66 20 58	2573	68 0 30	2587	69 39 43	2601	71 18 37	2615
	α Pegasi W.	51 23 2	3044	52 52 20	3032	54 21 53	3022	55 51 38	3016
	SATURN W.	30 43 56	2342	32 28 54	2359	34 13 27	2377	35 57 35	2394
	Aldebaran E.	29 41 50	2387	27 57 56	2410	26 14 35	2434	24 31 48	2458
	Pollux E.	73 50 56	2369	72 6 36	2388	70 22 44	2407	68 39 18	2426
	JUPITER E.	111 35 42	2426	109 52 45	2445	108 10 15	2464	106 28 11	2483
14	α Aquilæ W.	110 41 47	3333	112 5 20	3372	113 28 9	3412	114 50 12	3454
	Fomalhaut W.	79 28 0	2695	81 4 47	2712	82 41 11	2729	84 17 13	2747
	α Pegasi W.	63 21 29	3016	64 51 23	3021	66 21 10	3027	67 50 50	3031
	SATURN W.	44 31 50	2486	46 13 23	2504	47 54 31	2522	49 35 14	2540
	Pollux E.	60 9 4	2524	58 28 24	2543	56 48 11	2563	55 8 25	2582
	JUPITER E.	98 4 32	2578	96 25 7	2598	94 46 9	2617	93 7 37	2636
	SUN E.	119 10 57	2850	117 37 34	2870	116 4 37	2889	114 32 4	2909
15	Fomalhaut W.	92 11 28	2837	93 45 8	2855	95 18 25	2873	96 51 19	2891
	α Pegasi W.	75 16 33	3082	76 45 4	3095	78 13 19	3107	79 41 20	3119
	SATURN W.	57 52 31	2629	59 30 46	2646	61 8 38	2663	62 46 7	2681
	α Arietis W.	31 40 45	3150	33 7 54	3126	34 35 32	3107	36 3 33	3092
	Pollux E.	46 56 13	2680	45 19 6	2699	43 42 25	2718	42 6 9	2738
	JUPITER E.	85 1 15	2728	83 25 13	2746	81 49 34	2765	80 14 18	2781
	SUN E.	106 55 34	3006	105 25 29	3025	103 55 47	3043	102 26 28	3061
16	Fomalhaut W.	104 29 56	2983	106 0 30	3002	107 30 40	3020	109 0 28	3039
	α Pegasi W.	86 57 26	3188	88 23 49	3203	89 49 54	3218	91 15 42	3233
	SATURN W.	70 47 59	2760	72 23 19	2775	73 58 19	2790	75 33 0	2804
	α Arietis W.	43 26 45	3065	44 55 38	3064	46 24 32	3065	47 53 24	3067
	Pollux E.	34 11 12	2835	32 37 29	2855	31 4 11	2875	29 31 20	2895

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
16	JUPITER E. SUN E.	78 39 25 100 57 31	2798 3079	77 4 54 99 28 56	2815 3097	75 30 46 98 0 43	2831 3114	73 56 59 96 32 51	2848 3132
17	Fomalhaut W. α Pegasi W. SATURN W. α Arietis W. Aldebaran W. Pollux E. JUPITER E. SUN E.	110 29 53 92 41 12 77 7 22 49 22 14 17 2 46 27 58 55 66 13 9 89 18 35	3057 3248 2818 3070 2928 2917 2924 3212	111 58 55 94 6 24 78 41 26 50 51 0 18 34 29 26 26 58 64 41 21 87 52 41	3076 3264 2832 3074 2930 2940 2938 3227	113 27 34 95 31 18 80 15 12 52 19 40 20 6 10 24 55 30 63 9 50 86 27 4	3094 3279 2845 3078 2933 2964 2952 3248	114 55 51 96 55 55 81 48 42 53 48 16 21 37 47 23 24 31 61 38 37 85 1 44	3113 3294 2858 3083 2937 2989 2965 3256
18	α Pegasi W. SATURN W. α Arietis W. Aldebaran W. JUPITER E. SUN E.	103 54 20 89 32 13 61 9 41 29 14 5 54 6 36 77 59 4	3375 2916 3111 2972 3027 3320	105 17 5 91 4 12 62 37 38 30 44 53 52 36 57 76 35 17	3392 2926 3117 2980 3038 3332	106 39 30 92 35 57 64 5 27 32 15 31 51 7 31 75 11 43	3409 2936 3122 2987 3049 3343	108 1 36 94 7 30 65 33 10 33 46 0 49 38 19 73 48 22	3426 2946 3128 2994 3059 3354
19	SATURN W. α Arietis W. Aldebaran W. JUPITER E. SUN E.	101 42 25 72 50 1 41 16 10 42 15 20 66 54 30	2988 3155 3029 3106 3401	103 12 53 74 17 4 42 45 46 40 47 18 65 32 15	2994 3160 3035 3114 3409	104 43 13 75 44 1 44 15 15 39 19 25 64 10 10	3001 3165 3041 3122 3417	106 13 24 77 10 52 45 44 37 37 51 43 62 48 13	3007 3169 3047 3130 3425
20	α Arietis W. Aldebaran W. JUPITER E. SUN E.	84 23 50 53 9 54 30 35 28 56 0 26	3189 3067 3167 3456	85 50 12 54 38 42 29 8 39 54 39 13	3193 3072 3174 3461	87 16 30 56 7 25 27 41 58 53 18 5	3196 3075 3181 3466	88 42 44 57 36 5 26 15 26 51 57 3	3199 3078 3189 3470
21	α Arietis W. Aldebaran W. Pollux W. JUPITER E. SUN E.	95 53 7 64 58 41 21 11 38 19 5 20 45 12 59	3211 3087 3193 3239 3488	97 19 3 66 27 7 22 37 56 17 39 57 43 52 22	3213 3088 3181 3256 3491	98 44 57 67 55 31 24 4 28 16 14 54 42 31 48	3214 3088 3170 3276 3494	100 10 49 69 23 55 25 31 13 14 50 14 41 11 17	3215 3089 3161 3300 3496
22	α Arietis W. Aldebaran W. Pollux W. SUN E.	107 19 44 76 45 56 32 47 17 34 29 21	3223 3086 3129 3508	108 45 26 78 14 23 34 14 52 33 9 6	3224 3084 3124 3511	110 11 7 79 42 52 35 42 33 31 48 53	3225 3082 3119 3514	111 36 46 81 11 23 37 10 19 30 28 44	3226 3080 3114 3517
28	SUN W. α Aquilæ E. Fomalhaut E.	32 48 4 81 55 5 114 45 20	3233 3546 3047	34 13 34 80 35 32 113 16 5	3220 3545 3033	35 39 20 79 15 58 111 46 33	3207 3545 3020	37 5 21 77 56 23 110 16 45	3195 3545 3017
29	SUN W. α Aquilæ E. Fomalhaut E.	44 18 59 71 18 58 102 43 52	3136 3563 2946	45 46 25 69 59 43 101 12 32	3124 3571 2935	47 14 5 68 40 37 99 40 58	3112 3580 2924	48 42 0 67 21 41 98 9 10	3101 3591 2913
30	SUN W. α Aquilæ E. Fomalhaut E.	56 5 7 60 50 33 90 26 37	3041 3673 2859	57 34 29 59 33 17 88 53 26	3029 3697 2849	59 4 5 58 16 26 87 20 2	3017 3724 2839	60 33 56 57 0 4 85 46 24	3005 3754 2829

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
16	JUPITER	E.	72 23 33	2864	70 50 28	2879	69 17 42	2894	67 45 16	2909
	SUN	E.	95 5 20	3149	93 38 10	3165	92 11 19	3181	90 44 48	3197
17	Fomalhaut	W.	116 23 46	3132	117 51 17	3151	119 18 26	3170	120 45 11	3188
	α Pegasi	W.	98 20 13	3310	99 44 13	3326	101 7 54	3342	102 31 16	3358
	SATURN	W.	83 21 55	2870	84 54 52	2882	86 27 34	2894	88 0 1	2905
	α Arietis	W.	55 16 46	3089	56 45 9	3094	58 13 26	3099	59 41 37	3105
	Aldebaran	W.	23 9 19	2942	24 40 44	2949	26 12 0	2957	27 43 7	2964
	Pollux	E.	21 54 4	3017	20 24 12	3049	18 55 0	3085	17 26 33	3127
	JUPITER	E.	60 7 41	2978	58 37 2	2991	57 6 38	3003	55 36 30	3015
	SUN	E.	83 36 41	3270	82 11 54	3283	80 47 23	3295	79 23 6	3308
18	α Pegasi	W.	109 23 23	3445	110 44 49	3463	112 5 54	3481	113 26 38	3499
	SATURN	W.	95 38 51	2954	97 10 1	2963	98 40 59	2972	100 11 47	2980
	α Arietis	W.	67 0 46	3134	68 28 14	3139	69 55 36	3144	71 22 52	3150
	Aldebaran	W.	35 16 20	3002	36 46 30	3009	38 16 32	3016	39 46 25	3023
	JUPITER	E.	48 9 19	3069	46 40 32	3079	45 11 57	3088	43 43 33	3097
	SUN	E.	72 25 13	3364	71 2 16	3374	69 39 30	3384	68 16 55	3393
19	SATURN	W.	107 43 28	3013	109 13 24	3018	110 43 14	3023	112 12 57	3028
	α Arietis	W.	78 37 38	3174	80 4 18	3178	81 30 53	3182	82 57 24	3186
	Aldebaran	W.	47 13 52	3052	48 43 1	3056	50 12 4	3060	51 41 2	3065
	JUPITER	E.	36 24 10	3138	34 56 46	3145	33 29 31	3153	32 2 25	3160
	SUN	E.	61 26 25	3432	60 4 45	3438	58 43 12	3444	57 21 46	3450
20	α Arietis	W.	90 8 55	3202	91 35 2	3204	93 1 6	3206	94 27 8	3209
	Aldebaran	W.	59 4 41	3080	60 33 14	3082	62 1 45	3084	63 30 14	3086
	JUPITER	E.	24 49 4	3198	23 22 52	3206	21 56 51	3215	20 31 0	3225
	SUN	E.	50 36 5	3474	49 15 12	3478	47 54 24	3482	46 33 40	3485
21	α Arietis	W.	101 36 40	3217	103 2 28	3219	104 28 15	3220	105 54 0	3221
	Aldebaran	W.	70 52 18	3089	72 20 41	3088	73 49 5	3087	75 17 30	3087
	Pollux	W.	26 58 9	3153	28 25 14	3146	29 52 28	3140	31 19 49	3134
	JUPITER	E.	13 26 3	3332	12 2 32	3322	10 39 56	3455	9 18 40	3562
	SUN	E.	39 50 48	3498	38 30 22	3501	37 9 59	3504	35 49 39	3506
22	α Arietis	W.	113 2 24	3228	114 28 0	3230	115 53 34	3231	117 19 7	3231
	Aldebaran	W.	82 39 57	3078	84 8 33	3076	85 37 12	3073	87 5 54	3071
	Pollux	W.	38 38 12	3110	40 6 10	3104	41 34 15	3100	43 2 26	3096
	SUN	E.	29 8 39	3521	27 48 38	3525	26 28 42	3530	25 8 51	3536
28	SUN	W.	38 31 36	3183	39 58 5	3171	41 24 49	3159	42 51 47	3148
	α Aquilæ	E.	76 36 49	3546	75 17 16	3549	73 57 46	3553	72 38 20	3557
	Fomalhaut	E.	108 46 41	2995	107 16 22	2982	105 45 47	2970	104 14 57	2958
29	SUN	W.	50 10 9	3089	51 38 32	3077	53 7 9	3065	54 36 1	3053
	α Aquilæ	E.	66 2 57	3603	64 44 26	3618	63 26 11	3634	62 8 12	3652
	Fomalhaut	E.	96 37 7	2902	95 4 51	2891	93 32 20	2880	91 59 35	2869
30	SUN	W.	62 4 3	2993	63 34 25	2981	65 5 2	2968	66 35 55	2954
	α Aquilæ	E.	55 44 13	3788	54 28 58	3825	53 14 22	3867	52 0 29	3916
	Fomalhaut	E.	84 12 34	2819	82 38 31	2809	81 4 15	2800	79 29 47	2791

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.				
Thur.	1	^h 12 ^m 28 ^s 59.34	^s 9.054	S. [°] 3 ['] 7 ["] 56.4	["] - 58.27	['] 16 ["] 0.80	^s 64.31	^m 10 ^s 14.65	^s 0.801	
Frid.	2	12 32 36.78	9.066	3 31 14.0	58.18	16 1.08	64.35	10 33.72	0.789	
Sat.	3	12 36 14.50	9.079	3 54 29.0	58.07	16 1.36	64.40	10 52.50	0.776	
SUN.	4	12 39 52.52	9.092	4 17 41.3	- 57.95	16 1.65	64.45	11 10.98	0.763	
Mon.	5	12 43 30.88	9.106	4 40 50.2	57.80	16 1.93	64.50	11 29.13	0.749	
Tues.	6	12 47 9.59	9.121	5 3 55.6	57.65	16 2.22	64.56	11 46.92	0.734	
Wed.	7	12 50 48.67	9.138	5 26 57.0	- 57.48	16 2.50	64.62	12 4.34	0.718	
Thur.	8	12 54 28.16	9.154	5 49 54.3	57.29	16 2.78	64.68	12 21.37	0.701	
Frid.	9	12 58 8.07	9.172	6 12 47.0	57.09	16 3.06	64.75	12 37.97	0.683	
Sat.	10	13 1 48.42	9.191	6 35 34.7	- 56.88	16 3.34	64.82	12 54.13	0.664	
SUN.	11	13 5 29.24	9.211	6 58 17.1	56.65	16 3.61	64.89	13 9.82	0.644	
Mon.	12	13 9 10.54	9.232	7 20 54.0	56.41	16 3.88	64.96	13 25.03	0.623	
Tues.	13	13 12 52.36	9.254	7 43 24.8	- 56.15	16 4.15	65.03	13 39.71	0.601	
Wed.	14	13 16 34.72	9.276	8 5 49.3	55.88	16 4.42	65.11	13 53.87	0.578	
Thur.	15	13 20 17.63	9.300	8 28 7.2	55.60	16 4.69	65.19	14 7.48	0.554	
Frid.	16	13 24 1.12	9.325	8 50 18.2	- 55.30	16 4.96	65.27	14 20.50	0.530	
Sat.	17	13 27 45.21	9.350	9 12 21.4	54.98	16 5.23	65.36	14 32.93	0.505	
SUN.	18	13 31 29.90	9.375	9 34 17.0	54.65	16 5.50	65.45	14 44.77	0.479	
Mon.	19	13 35 15.22	9.402	9 56 4.5	- 54.30	16 5.76	65.54	14 55.97	0.453	
Tues.	20	13 39 1.18	9.429	10 17 43.3	53.93	16 6.03	65.63	15 6.54	0.426	
Wed.	21	13 42 47.81	9.457	10 39 13.0	53.55	16 6.29	65.72	15 16.44	0.398	
Thur.	22	13 46 35.10	9.485	11 0 33.5	- 53.15	16 6.56	65.81	15 25.68	0.370	
Frid.	23	13 50 23.07	9.513	11 21 44.1	52.73	16 6.82	65.91	15 34.24	0.342	
Sat.	24	13 54 11.73	9.542	11 42 44.5	52.29	16 7.09	66.02	15 42.11	0.313	
SUN.	25	13 58 1.10	9.572	12 3 34.3	- 51.84	16 7.35	66.13	15 49.26	0.283	
Mon.	26	14 1 51.20	9.602	12 24 12.9	51.37	16 7.61	66.23	15 55.71	0.253	
Tues.	27	14 5 42.02	9.633	12 44 40.2	50.89	16 7.87	66.34	16 1.43	0.222	
Wed.	28	14 9 33.58	9.664	13 4 55.6	- 50.38	16 8.14	66.44	16 6.42	0.191	
Thur.	29	14 13 25.89	9.695	13 24 58.6	49.86	16 8.40	66.55	16 10.65	0.160	
Frid.	30	14 17 18.94	9.726	13 44 48.8	49.32	16 8.66	66.66	16 14.14	0.129	
Sat.	31	14 21 12.76	9.758	14 4 25.8	48.76	16 8.92	66.77	16 16.86	0.098	
SUN.	32	14 25 7.34	9.791	S. 14 23 49.2	- 48.18	16 9.18	66.88	16 18.83	0.066	

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0^s.18 from the sidereal time.
The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ' "	"	m s	s	h m s
Thur.	1	12 29 0.89	9.056	S. 3 8 6.4	-58.28	10 14.79	0.801	12 39 15.68
Frid.	2	12 32 38.38	9.068	3 31 24.2	58.18	10 33.86	0.789	12 43 12.24
Sat.	3	12 36 16.15	9.081	3 54 39.5	58.08	10 52.64	0.776	12 47 8.79
SUN.	4	12 39 54.22	9.094	4 17 52.0	-57.96	11 11.12	0.763	12 51 5.34
Mon.	5	12 43 32.63	9.108	4 41 1.2	57.81	11 29.27	0.749	12 55 1.90
Tues.	6	12 47 11.39	9.123	5 4 6.9	57.65	11 47.06	0.734	12 58 58.45
Wed.	7	12 50 50.52	9.139	5 27 8.6	-57.48	12 4.48	0.718	13 2 55.00
Thur.	8	12 54 30.05	9.156	5 50 6.1	57.30	12 21.51	0.701	13 6 51.56
Frid.	9	12 58 10.00	9.174	6 12 59.0	57.10	12 38.11	0.683	13 10 48.11
Sat.	10	13 1 50.39	9.193	6 35 46.9	-56.89	12 54.27	0.664	13 14 44.66
SUN.	11	13 5 31.25	9.213	6 58 29.5	56.66	13 9.96	0.644	13 18 41.21
Mon.	12	13 9 12.60	9.234	7 21 6.6	56.42	13 25.17	0.623	13 22 37.77
Tues.	13	13 12 54.47	9.256	7 43 37.6	-56.16	13 39.85	0.601	13 26 34.32
Wed.	14	13 16 36.87	9.278	8 6 2.3	55.89	13 54.00	0.578	13 30 30.87
Thur.	15	13 20 19.82	9.301	8 28 20.4	55.61	14 7.61	0.554	13 34 27.43
Frid.	16	13 24 3.35	9.326	8 50 31.4	-55.30	14 20.63	0.530	13 38 23.98
Sat.	17	13 27 47.48	9.351	9 12 34.8	54.98	14 33.05	0.505	13 42 20.53
SUN.	18	13 31 32.20	9.377	9 34 30.5	54.65	14 44.87	0.479	13 46 17.09
Mon.	19	13 35 17.56	9.403	9 56 18.0	-54.30	14 56.08	0.453	13 50 13.64
Tues.	20	13 39 3.55	9.430	10 17 56.9	53.93	15 6.65	0.426	13 54 10.20
Wed.	21	13 42 50.21	9.458	10 39 26.7	53.55	15 16.55	0.398	13 58 6.75
Thur.	22	13 46 37.52	9.486	11 0 47.2	-53.15	15 25.78	0.370	14 2 3.30
Frid.	23	13 50 25.53	9.515	11 21 57.8	52.73	15 34.33	0.342	14 5 59.86
Sat.	24	13 54 14.22	9.544	11 42 58.2	52.30	15 42.19	0.313	14 9 56.41
SUN.	25	13 58 3.62	9.573	12 3 48.0	-51.84	15 49.34	0.283	14 13 52.96
Mon.	26	14 1 53.74	9.603	12 24 26.6	51.37	15 55.78	0.253	14 17 49.52
Tues.	27	14 5 44.58	9.634	12 44 53.8	50.89	16 1.49	0.222	14 21 46.07
Wed.	28	14 9 36.16	9.665	13 5 9.1	-50.38	16 6.47	0.191	14 25 42.63
Thur.	29	14 13 28.49	9.696	13 25 12.0	49.85	16 10.69	0.160	14 29 39.18
Frid.	30	14 17 21.56	9.727	13 45 2.1	49.31	16 14.17	0.129	14 33 35.73
Sat.	31	14 21 15.40	9.759	14 4 39.0	48.75	16 16.89	0.098	14 37 32.29
SUN.	32	14 25 10.00	9.791	S. 14 24 2.3	-48.18	16 18.85	0.066	14 41 28.85

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

Diff. for 1 Hour,
+ 9°.8565.
(Table III.)

AT GREENWICH MEAN NOON.									
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.	
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.				
		λ	λ'						
1	275	187° 54' 16.5"	53° 56.6'	147.63	+ 0.11	0.000 3174	- 53.1	11 ^h 18 ^m 52.79 ^s	
2	276	188° 53' 20.6"	53° 0.5'	147.71	- 0.04	0.000 1896	53.2	11 14 56.89	
3	277	189° 52' 26.3"	52° 6.2'	147.78	0.17	0.000 0617	53.3	11 11 0.98	
4	278	190° 51' 33.8"	51° 13.6'	147.85	- 0.29	9.999 9337	- 53.3	11 7 5.07	
5	279	191° 50' 43.1"	50° 22.7'	147.92	0.41	9.999 8059	53.2	11 3 9.17	
6	280	192° 49' 54.1"	49° 33.7'	147.99	0.51	9.999 6783	53.0	10 59 13.26	
7	281	193° 49' 6.9"	48° 46.4'	148.07	- 0.58	9.999 5513	- 52.8	10 55 17.35	
8	282	194° 48' 21.6"	48° 1.0'	148.15	0.60	9.999 4248	52.5	10 51 21.44	
9	283	195° 47' 38.2"	47° 17.5'	148.24	0.59	9.999 2991	52.2	10 47 25.54	
10	284	196° 46' 56.9"	46° 36.1'	148.32	- 0.55	9.999 1742	- 51.9	10 43 29.63	
11	285	197° 46' 17.6"	45° 56.7'	148.41	0.48	9.999 0502	51.5	10 39 33.72	
12	286	198° 45' 40.5"	45° 19.5'	148.50	0.40	9.998 9270	51.2	10 35 37.81	
13	287	199° 45' 5.6"	44° 44.5'	148.59	- 0.30	9.998 8046	- 50.9	10 31 41.91	
14	288	200° 44' 33.0"	44° 11.8'	148.69	0.17	9.998 6828	50.6	10 27 46.00	
15	289	201° 44' 2.7"	43° 41.4'	148.78	- 0.06	9.998 5616	50.4	10 23 50.09	
16	290	202° 43' 34.7"	43° 13.2'	148.88	+ 0.06	9.998 4410	- 50.2	10 19 54.18	
17	291	203° 43' 9.0"	42° 47.4'	148.98	0.18	9.998 3209	50.0	10 15 58.28	
18	292	204° 42' 45.5"	42° 23.8'	149.07	0.29	9.998 2011	49.9	10 12 2.37	
19	293	205° 42' 24.3"	42° 2.5'	149.16	+ 0.37	9.998 0817	- 49.8	10 8 6.46	
20	294	206° 42' 5.4"	41° 43.5'	149.26	0.42	9.997 9626	49.7	10 4 10.55	
21	295	207° 41' 48.7"	41° 26.7'	149.35	0.46	9.997 8436	49.6	10 0 14.65	
22	296	208° 41' 34.1"	41° 11.9'	149.44	+ 0.46	9.997 7249	- 49.5	9 56 18.74	
23	297	209° 41' 21.6"	40° 59.4'	149.52	0.45	9.997 6063	49.4	9 52 22.83	
24	298	210° 41' 11.2"	40° 48.9'	149.61	0.40	9.997 4878	49.3	9 48 26.92	
25	299	211° 41' 2.9"	40° 40.4'	149.69	+ 0.33	9.997 3695	- 49.3	9 44 31.01	
26	300	212° 40' 56.5"	40° 33.9'	149.77	0.24	9.997 2514	49.2	9 40 35.10	
27	301	213° 40' 52.0"	40° 29.2'	149.85	+ 0.13	9.997 1334	49.1	9 36 39.20	
28	302	214° 40' 49.2"	40° 26.4'	149.92	- 0.01	9.997 0157	- 49.0	9 32 43.29	
29	303	215° 40' 48.2"	40° 25.3'	149.99	0.15	9.996 8984	48.8	9 28 47.38	
30	304	216° 40' 48.9"	40° 25.8'	150.06	0.29	9.996 7815	48.5	9 24 51.47	
31	305	217° 40' 51.2"	40° 28.0'	150.13	0.43	9.996 6653	48.2	9 20 55.56	
32	306	218° 40' 55.0"	40° 31.7'	150.19	- 0.55	9.996 5498	- 47.9	9 16 59.65	

NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.

Diff. for 1 Hour.
— 9^s.8296.
(Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMI- DIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
							h m	m	d
1	15 37.4	15 42.7	57 14.4	+ 1.60	57 34.0	+ 1.66	4 30.3	2.27	5.9
2	15 48.2	15 53.8	57 54.2	1.70	58 14.8	1.72	5 26.3	2.40	6.9
3	15 59.5	16 5.1	58 35.5	1.72	58 56.0	1.69	6 24.7	2.46	7.9
4	16 10.5	16 15.7	59 16.0	+ 1.62	59 35.0	+ 1.53	7 24.2	2.47	8.9
5	16 20.5	16 24.7	59 52.5	1.38	60 8.2	1.20	8 23.1	2.42	9.9
6	16 28.3	16 31.1	60 21.3	0.98	60 31.6	0.71	9 20.3	2.34	10.9
7	16 33.0	16 33.8	60 38.4	+ 0.42	60 41.6	+ 0.10	10 15.5	2.26	11.9
8	16 33.6	16 32.3	60 40.8	- 0.24	60 35.9	- 0.58	11 8.7	2.19	12.9
9	16 29.8	16 26.3	60 26.9	0.91	60 14.0	1.24	12 0.8	2.16	13.9
10	16 21.8	16 16.5	59 57.5	- 1.51	59 37.8	- 1.75	12 52.4	2.15	14.9
11	16 10.4	16 3.7	59 15.4	1.95	58 51.0	2.10	13 44.3	2.17	15.9
12	15 56.7	15 49.4	58 25.1	2.20	57 58.3	2.24	14 36.8	2.20	16.9
13	15 42.0	15 34.7	57 31.3	- 2.24	57 4.5	- 2.20	15 29.9	2.21	17.9
14	15 27.6	15 20.9	56 38.6	2.11	56 13.9	1.99	16 23.1	2.20	18.9
15	15 14.6	15 8.9	55 50.9	1.84	55 29.7	1.67	17 15.6	2.16	19.9
16	15 3.7	14 59.2	55 10.8	- 1.48	54 54.1	- 1.28	18 6.6	2.09	20.9
17	14 55.3	14 52.1	54 39.9	1.08	54 28.3	0.86	18 55.6	1.99	21.9
18	14 49.6	14 47.9	54 19.2	0.65	54 12.7	0.44	19 42.3	1.90	22.9
19	14 46.8	14 46.4	54 8.7	- 0.23	54 7.1	- 0.04	20 26.9	1.82	23.9
20	14 46.5	14 47.3	54 7.8	+ 0.14	54 10.6	+ 0.32	21 9.9	1.77	24.9
21	14 48.6	14 50.5	54 15.5	0.48	54 22.2	0.63	21 51.9	1.73	25.9
22	14 52.7	14 55.4	54 30.6	+ 0.76	54 40.4	+ 0.87	22 33.5	1.74	26.9
23	14 58.4	15 1.7	54 51.5	0.97	55 3.6	1.05	23 15.8	1.79	27.9
24	15 5.3	15 9.0	55 16.6	1.11	55 30.2	1.16	23 59.5	1.86	28.9
25	15 12.9	15 16.8	55 44.3	+ 1.19	55 58.8	+ 1.21	6	.	0.2
26	15 20.8	15 24.8	56 13.5	1.23	56 28.2	1.23	0 45.4	1.97	1.2
27	15 28.8	15 32.8	56 43.0	1.23	56 57.7	1.22	1 34.3	2.11	2.2
28	15 36.8	15 40.7	57 12.2	+ 1.21	57 26.7	+ 1.19	2 26.6	2.25	3.2
29	15 44.6	15 48.4	57 40.9	1.18	57 54.9	1.16	3 22.0	2.37	4.2
30	15 52.2	15 55.9	58 8.7	1.13	58 22.2	1.10	4 19.6	2.43	5.2
31	15 59.4	16 2.9	58 35.3	1.07	58 47.9	1.03	5 18.1	2.43	6.2
32	16 6.1	16 9.2	58 59.9	+ 0.97	59 11.1	+ 0.89	6 16.0	2.38	7.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 1.					SATURDAY 3.				
0	h m s		° ' "	"	0	h m s		° ' "	"
0	16 59 45.74	2.3255	S. 21 32 40.0	6.209	0	18 56 43.55	2.5225	S. 23 59 29.8	0.417
1	17 2 5.43	2.3309	21 38 49.1	6.093	1	18 59 14.97	2.5247	23 59 0.1	0.572
2	17 4 25.45	2.3362	21 44 51.2	5.977	2	19 1 46.51	2.5267	23 58 21.1	0.727
3	17 6 45.78	2.3415	21 50 46.3	5.859	3	19 4 18.17	2.5287	23 57 32.8	0.884
4	17 9 6.43	2.3467	21 56 34.3	5.740	4	19 6 49.95	2.5306	23 56 35.0	1.041
5	17 11 27.39	2.3519	22 2 15.1	5.619	5	19 9 21.84	2.5323	23 55 27.9	1.197
6	17 13 48.66	2.3572	22 7 48.6	5.497	6	19 11 53.83	2.5340	23 54 11.4	1.354
7	17 16 10.25	2.3624	22 13 14.8	5.376	7	19 14 25.92	2.5356	23 52 45.4	1.512
8	17 18 32.15	2.3675	22 18 33.7	5.252	8	19 16 58.10	2.5370	23 51 10.0	1.668
9	17 20 54.35	2.3726	22 23 45.1	5.128	9	19 19 30.36	2.5383	23 49 25.2	1.826
10	17 23 16.86	2.3777	22 28 49.1	5.002	10	19 22 2.70	2.5397	23 47 30.9	1.984
11	17 25 39.67	2.3827	22 33 45.4	4.876	11	19 24 35.12	2.5408	23 45 27.1	2.142
12	17 28 2.78	2.3877	22 38 34.2	4.749	12	19 27 7.60	2.5418	23 43 13.9	2.299
13	17 30 26.19	2.3926	22 43 15.3	4.620	13	19 29 40.14	2.5428	23 40 51.2	2.458
14	17 32 49.89	2.3974	22 47 48.6	4.490	14	19 32 12.74	2.5437	23 38 18.9	2.617
15	17 35 13.88	2.4022	22 52 14.1	4.359	15	19 34 45.38	2.5443	23 35 37.2	2.774
16	17 37 38.16	2.4070	22 56 31.7	4.227	16	19 37 18.06	2.5450	23 32 46.0	2.932
17	17 40 2.72	2.4117	23 0 41.4	4.096	17	19 39 50.78	2.5456	23 29 45.3	3.091
18	17 42 27.57	2.4164	23 4 43.2	3.962	18	19 42 23.53	2.5460	23 26 35.1	3.248
19	17 44 52.69	2.4210	23 8 36.9	3.827	19	19 44 56.30	2.5463	23 23 15.5	3.407
20	17 47 18.09	2.4256	23 12 22.5	3.692	20	19 47 29.09	2.5466	23 19 46.3	3.565
21	17 49 43.76	2.4301	23 15 59.9	3.555	21	19 50 1.89	2.5467	23 16 7.7	3.722
22	17 52 9.70	2.4345	23 19 29.7	3.418	22	19 52 34.70	2.5467	23 12 19.6	3.881
23	17 54 35.90	2.4388	S. 23 22 50.1	3.281	23	19 55 7.50	2.5467	S. 23 8 22.0	4.038
FRIDAY 2.					SUNDAY 4.				
0	17 57 2.36	2.4432	S. 23 26 2.8	3.142	0	19 57 40.30	2.5466	S. 23 4 15.0	4.196
1	17 59 29.08	2.4474	23 29 7.1	3.001	1	20 0 13.09	2.5463	22 59 58.5	4.352
2	18 1 56.05	2.4515	23 32 2.9	2.860	2	20 2 45.86	2.5459	22 55 32.7	4.509
3	18 4 23.26	2.4556	23 34 50.3	2.719	3	20 5 18.60	2.5454	22 50 57.4	4.666
4	18 6 50.72	2.4597	23 37 29.2	2.577	4	20 7 51.31	2.5449	22 46 12.8	4.822
5	18 9 18.42	2.4637	23 39 59.5	2.433	5	20 10 23.99	2.5442	22 41 18.8	4.977
6	18 11 46.36	2.4675	23 42 21.2	2.289	6	20 12 56.62	2.5435	22 36 15.5	5.132
7	18 14 14.52	2.4712	23 44 34.2	2.144	7	20 15 29.21	2.5427	22 31 2.9	5.287
8	18 16 42.91	2.4750	23 46 38.5	1.999	8	20 18 1.74	2.5417	22 25 41.0	5.442
9	18 19 11.52	2.4786	23 48 34.1	1.853	9	20 20 34.22	2.5408	22 20 9.8	5.596
10	18 21 40.34	2.4821	23 50 20.9	1.706	10	20 23 6.64	2.5397	22 14 29.5	5.749
11	18 24 9.37	2.4856	23 51 58.8	1.557	11	20 25 38.98	2.5384	22 8 39.9	5.903
12	18 26 38.61	2.4890	23 53 27.8	1.409	12	20 28 11.25	2.5372	22 2 41.1	6.056
13	18 29 8.05	2.4922	23 54 47.9	1.260	13	20 30 43.44	2.5358	21 56 33.2	6.207
14	18 31 37.68	2.4955	23 55 59.0	1.111	14	20 33 15.55	2.5344	21 50 16.2	6.358
15	18 34 7.51	2.4987	23 57 1.2	0.961	15	20 35 47.57	2.5329	21 43 50.2	6.509
16	18 36 37.52	2.5017	23 57 54.3	0.809	16	20 38 19.50	2.5312	21 37 15.1	6.660
17	18 39 7.71	2.5046	23 58 38.3	0.657	17	20 40 51.32	2.5295	21 30 31.0	6.809
18	18 41 38.07	2.5073	23 59 13.2	0.506	18	20 43 23.04	2.5278	21 23 38.0	6.957
19	18 44 8.59	2.5101	23 59 39.0	0.353	19	20 45 54.66	2.5260	21 16 36.1	7.105
20	18 46 39.28	2.5128	23 59 55.6	0.200	20	20 48 26.16	2.5241	21 9 25.4	7.252
21	18 49 10.13	2.5154	24 0 3.0	-0.047	21	20 50 57.55	2.5221	21 2 5.8	7.399
22	18 51 41.13	2.5178	24 0 1.2	+0.107	22	20 53 28.81	2.5200	20 54 37.5	7.545
23	18 54 12.27	2.5202	23 59 50.1	0.262	23	20 55 59.95	2.5179	20 47 0.4	7.690
24	18 56 43.55	2.5225	S. 23 59 29.8	0.417	24	20 58 30.96	2.5157	S. 20 39 14.7	7.833

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 5.					WEDNESDAY 7.				
0	20 58 30.96	2.5157	S. 20 39 14.7	7.833	0	22 55 55.61	2.3687	S. 11 58 57.6	13.322
1	21 1 1.84	2.5135	20 31 20.4	7.977	1	22 58 17.64	2.3655	11 45 35.9	13.401
2	21 3 32.58	2.5112	20 23 17.5	8.119	2	23 0 39.47	2.3623	11 32 9.5	13.477
3	21 6 3.18	2.5087	20 15 6.1	8.260	3	23 3 1.12	2.3592	11 18 38.7	13.551
4	21 8 33.63	2.5063	20 6 46.3	8.400	4	23 5 22.58	2.3561	11 5 3.4	13.625
5	21 11 3.94	2.5038	19 58 18.1	8.539	5	23 7 43.85	2.3530	10 51 23.7	13.696
6	21 13 34.09	2.5012	19 49 41.6	8.677	6	23 10 4.93	2.3499	10 37 39.9	13.765
7	21 16 4.09	2.4987	19 40 56.8	8.815	7	23 12 25.84	2.3469	10 23 51.9	13.833
8	21 18 33.93	2.4960	19 32 3.8	8.951	8	23 14 46.56	2.3438	10 9 59.9	13.900
9	21 21 3.61	2.4933	19 23 2.7	9.086	9	23 17 7.10	2.3408	9 56 3.9	13.964
10	21 23 33.13	2.4906	19 13 53.5	9.220	10	23 19 27.46	2.3379	9 42 4.2	14.027
11	21 26 2.48	2.4877	19 4 36.3	9.352	11	23 21 47.65	2.3350	9 28 0.7	14.088
12	21 28 31.66	2.4849	18 55 11.2	9.484	12	23 24 7.66	2.3321	9 13 53.6	14.147
13	21 31 0.67	2.4820	18 45 38.2	9.616	13	23 26 27.50	2.3292	8 59 43.0	14.204
14	21 33 29.50	2.4790	18 35 57.3	9.746	14	23 28 47.17	2.3264	8 45 29.1	14.259
15	21 35 58.15	2.4761	18 26 8.7	9.873	15	23 31 6.67	2.3237	8 31 11.9	14.313
16	21 38 26.63	2.4732	18 16 12.5	10.000	16	23 33 26.01	2.3209	8 16 51.5	14.366
17	21 40 54.93	2.4701	18 6 8.7	10.126	17	23 35 45.18	2.3182	8 2 28.0	14.417
18	21 43 23.04	2.4669	17 55 57.4	10.250	18	23 38 4.19	2.3155	7 48 1.5	14.465
19	21 45 50.96	2.4638	17 45 38.7	10.373	19	23 40 23.04	2.3129	7 33 32.2	14.512
20	21 48 18.70	2.4607	17 35 12.6	10.496	20	23 42 41.74	2.3103	7 19 0.1	14.557
21	21 50 46.25	2.4576	17 24 39.2	10.617	21	23 45 0.28	2.3077	7 4 25.4	14.600
22	21 53 13.61	2.4544	17 13 58.6	10.736	22	23 47 18.67	2.3052	6 49 48.1	14.642
23	21 55 40.78	2.4512	S. 17 3 10.9	10.854	23	23 49 36.91	2.3027	S. 6 35 8.4	14.682
TUESDAY 6.					THURSDAY 8.				
0	21 58 7.75	2.4479	S. 16 52 16.1	10.971	0	23 51 55.00	2.3003	S. 6 20 26.3	14.720
1	22 0 34.53	2.4447	16 41 14.4	11.086	1	23 54 12.95	2.2980	6 5 42.0	14.756
2	22 3 1.11	2.4414	16 30 5.8	11.200	2	23 56 30.76	2.2957	5 50 55.6	14.790
3	22 5 27.50	2.4382	16 18 50.4	11.312	3	23 58 48.43	2.2933	5 36 7.2	14.822
4	22 7 53.69	2.4348	16 7 28.4	11.423	4	0 1 5.96	2.2911	5 21 16.9	14.853
5	22 10 19.68	2.4316	15 55 59.7	11.533	5	0 3 23.36	2.2889	5 6 24.8	14.882
6	22 12 45.48	2.4282	15 44 24.4	11.641	6	0 5 40.63	2.2867	4 51 31.0	14.910
7	22 15 11.07	2.4248	15 32 42.8	11.747	7	0 7 57.77	2.2847	4 36 35.6	14.936
8	22 17 36.46	2.4215	15 20 54.8	11.853	8	0 10 14.79	2.2827	4 21 38.7	14.960
9	22 20 1.65	2.4182	15 9 0.5	11.957	9	0 12 31.69	2.2806	4 6 40.4	14.982
10	22 22 26.65	2.4149	14 57 0.0	12.058	10	0 14 48.46	2.2786	3 51 40.9	15.002
11	22 24 51.44	2.4115	14 44 53.5	12.159	11	0 17 5.12	2.2767	3 36 40.2	15.022
12	22 27 16.03	2.4082	14 32 40.9	12.258	12	0 19 21.67	2.2748	3 21 38.4	15.037
13	22 29 40.42	2.4048	14 20 22.5	12.355	13	0 21 38.10	2.2730	3 6 35.7	15.052
14	22 32 4.61	2.4015	14 7 58.3	12.452	14	0 23 54.43	2.2713	2 51 32.2	15.065
15	22 34 28.60	2.3982	13 55 28.3	12.546	15	0 26 10.66	2.2696	2 36 27.9	15.077
16	22 36 52.39	2.3948	13 42 52.8	12.638	16	0 28 26.78	2.2678	2 21 22.9	15.087
17	22 39 15.98	2.3915	13 30 11.7	12.730	17	0 30 42.80	2.2662	2 6 17.5	15.094
18	22 41 39.37	2.3882	13 17 25.2	12.819	18	0 32 58.73	2.2647	1 51 11.6	15.101
19	22 44 2.57	2.3850	13 4 33.4	12.907	19	0 35 14.57	2.2632	1 36 5.4	15.105
20	22 46 25.57	2.3817	12 51 36.3	12.994	20	0 37 30.32	2.2617	1 20 59.0	15.107
21	22 48 48.37	2.3784	12 38 34.1	13.079	21	0 39 45.98	2.2602	1 5 52.5	15.109
22	22 51 10.98	2.3752	12 25 26.8	13.162	22	0 42 1.55	2.2589	0 50 45.9	15.108
23	22 53 33.39	2.3719	12 12 14.6	13.243	23	0 44 17.05	2.2577	0 35 39.5	15.106
24	22 55 55.61	2.3687	S. 11 58 57.6	13.322	24	0 46 32.47	2.2564	S. 0 20 33.2	15.102

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 9.					SUNDAY 11.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	0 46 32.47	2.2564	S. 0 20 33.2	15.102	0	2 34 17.74	2.2497	N. 11 8 36.1	13.031
1	0 48 47.82	2.2552	S. 0 5 27.2	15.096	1	2 36 32.74	2.2504	11 21 35.6	12.953
2	0 51 3.09	2.2540	N. 0 9 38.3	15.088	2	2 38 47.79	2.2512	11 34 30.5	12.874
3	0 53 18.30	2.2529	0 24 43.3	15.079	3	2 41 2.89	2.2521	11 47 20.5	12.793
4	0 55 33.44	2.2517	0 39 47.8	15.068	4	2 43 18.04	2.2529	12 0 5.7	12.712
5	0 57 48.51	2.2507	0 54 51.5	15.055	5	2 45 33.24	2.2537	12 12 45.9	12.628
6	1 0 3.53	2.2498	1 9 54.4	15.041	6	2 47 48.49	2.2546	12 25 21.1	12.544
7	1 2 18.49	2.2489	1 24 56.4	15.025	7	2 50 3.79	2.2555	12 37 51.2	12.459
8	1 4 33.40	2.2481	1 39 57.4	15.007	8	2 52 19.15	2.2565	12 50 16.2	12.373
9	1 6 48.26	2.2472	1 54 57.2	14.987	9	2 54 34.57	2.2574	13 2 36.0	12.285
10	1 9 3.07	2.2465	2 9 55.9	14.967	10	2 56 50.04	2.2583	13 14 50.4	12.196
11	1 11 17.84	2.2457	2 24 53.3	14.944	11	2 59 5.57	2.2593	13 26 59.5	12.107
12	1 13 32.56	2.2451	2 39 49.2	14.919	12	3 1 21.16	2.2603	13 39 3.2	12.016
13	1 15 47.25	2.2445	2 54 43.6	14.893	13	3 3 36.81	2.2613	13 51 1.4	11.924
14	1 18 1.90	2.2438	3 9 36.4	14.866	14	3 5 52.52	2.2622	14 2 54.1	11.831
15	1 20 16.51	2.2433	3 24 27.5	14.837	15	3 8 8.28	2.2632	14 14 41.1	11.737
16	1 22 31.10	2.2429	3 39 16.8	14.806	16	3 10 24.11	2.2643	14 26 22.5	11.642
17	1 24 45.66	2.2425	3 54 4.2	14.773	17	3 12 40.00	2.2654	14 37 58.1	11.545
18	1 27 0.20	2.2421	4 8 49.6	14.739	18	3 14 55.96	2.2664	14 49 27.9	11.448
19	1 29 14.71	2.2417	4 23 32.9	14.704	19	3 17 11.97	2.2674	15 0 51.9	11.350
20	1 31 29.21	2.2415	4 38 14.1	14.667	20	3 19 28.05	2.2686	15 12 9.9	11.251
21	1 33 43.69	2.2412	4 52 53.0	14.628	21	3 21 44.20	2.2696	15 23 22.0	11.151
22	1 35 58.15	2.2410	5 7 29.5	14.588	22	3 24 0.40	2.2706	15 34 28.0	11.050
23	1 38 12.61	2.2409	N. 5 22 3.6	14.547	23	3 26 16.67	2.2717	N. 15 45 28.0	10.948
SATURDAY 10.					MONDAY 12.				
0	1 40 27.06	2.2407	N. 5 36 35.1	14.503	0	3 28 33.01	2.2728	N. 15 56 21.8	10.845
1	1 42 41.50	2.2407	5 51 4.0	14.458	1	3 30 49.41	2.2738	16 7 9.4	10.742
2	1 44 55.94	2.2407	6 5 30.1	14.412	2	3 33 5.87	2.2748	16 17 50.8	10.637
3	1 47 10.38	2.2407	6 19 53.4	14.363	3	3 35 22.39	2.2759	16 28 25.8	10.531
4	1 49 24.83	2.2408	6 34 13.7	14.314	4	3 37 38.98	2.2770	16 38 54.5	10.425
5	1 51 39.28	2.2408	6 48 31.1	14.264	5	3 39 55.63	2.2781	16 49 16.8	10.318
6	1 53 53.73	2.2410	7 2 45.4	14.218	6	3 42 12.35	2.2792	16 59 32.7	10.210
7	1 56 8.20	2.2412	7 16 56.5	14.157	7	3 44 29.13	2.2802	17 9 42.0	10.100
8	1 58 22.68	2.2414	7 31 4.3	14.102	8	3 46 45.97	2.2812	17 19 44.7	9.991
9	2 0 37.17	2.2417	7 45 8.8	14.046	9	3 49 2.87	2.2822	17 29 40.9	9.881
10	2 2 51.68	2.2420	7 59 9.8	13.987	10	3 51 19.83	2.2832	17 39 30.4	9.769
11	2 5 6.21	2.2423	8 13 7.3	13.928	11	3 53 36.86	2.2842	17 49 13.2	9.657
12	2 7 20.76	2.2427	8 27 1.2	13.867	12	3 55 53.94	2.2852	17 58 40.2	9.544
13	2 9 35.33	2.2431	8 40 51.4	13.805	13	3 58 11.08	2.2862	18 8 18.5	9.431
14	2 11 49.93	2.2436	8 54 37.8	13.741	14	4 0 28.28	2.2872	18 17 40.9	9.317
15	2 14 4.56	2.2440	9 8 20.3	13.676	15	4 2 45.54	2.2881	18 26 56.5	9.202
16	2 16 19.21	2.2445	9 21 58.9	13.610	16	4 5 2.85	2.2890	18 36 5.1	9.086
17	2 18 33.90	2.2451	9 35 33.5	13.542	17	4 7 20.22	2.2899	18 45 6.8	8.970
18	2 20 48.62	2.2456	9 49 3.9	13.472	18	4 9 37.64	2.2907	18 54 1.5	8.853
19	2 23 3.37	2.2462	10 2 30.2	13.402	19	4 11 55.11	2.2917	19 2 49.2	8.736
20	2 25 18.17	2.2469	10 15 52.2	13.331	20	4 14 12.64	2.2926	19 11 29.8	8.617
21	2 27 33.00	2.2475	10 29 9.9	13.258	21	4 16 30.22	2.2933	19 20 3.3	8.499
22	2 29 47.87	2.2482	10 42 23.2	13.183	22	4 18 47.84	2.2941	19 28 29.7	8.380
23	2 32 2.78	2.2489	10 55 31.9	13.107	23	4 21 5.51	2.2948	19 36 48.9	8.260
24	2 34 17.74	2.2497	N. 11 8 36.1	13.031	24	4 23 23.22	2.2956	N. 19 45 0.9	8.139

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 13.					THURSDAY 15.				
0	4 23 23.22	2.2956	N.19 45 0.9	8.139	0	6 13 42.62	2.2834	N.23 50 23.3	8.024
1	4 25 40.98	2.2963	19 53 5.6	8.018	1	6 15 59.58	2.2819	23 52 20.9	1.896
2	4 27 58.78	2.2970	20 1 3.1	7.897	2	6 18 16.45	2.2804	23 54 10.8	1.767
3	4 30 16.62	2.2977	20 8 53.3	7.775	3	6 20 33.23	2.2788	23 55 53.0	1.640
4	4 32 34.50	2.2983	20 16 36.1	7.652	4	6 22 49.91	2.2772	23 57 27.6	1.512
5	4 34 52.42	2.2989	20 24 11.6	7.529	5	6 25 6.50	2.2756	23 58 54.5	1.385
6	4 37 10.37	2.2994	20 31 39.6	7.406	6	6 27 22.98	2.2737	24 0 13.8	1.258
7	4 39 28.35	2.3000	20 39 0.3	7.282	7	6 29 39.35	2.2720	24 1 25.5	1.131
8	4 41 46.37	2.3005	20 46 13.5	7.158	8	6 31 55.62	2.2702	24 2 29.5	1.004
9	4 44 4.41	2.3009	20 53 19.3	7.034	9	6 34 11.77	2.2682	24 3 26.0	0.876
10	4 46 22.48	2.3013	21 0 17.6	6.909	10	6 36 27.81	2.2664	24 4 14.9	0.752
11	4 48 40.57	2.3017	21 7 8.4	6.783	11	6 38 43.74	2.2644	24 5 56.2	0.626
12	4 50 58.68	2.3020	21 13 51.6	6.657	12	6 40 59.54	2.2623	24 5 30.0	0.501
13	4 53 16.81	2.3023	21 20 27.3	6.532	13	6 43 15.22	2.2602	24 5 56.3	0.376
14	4 55 34.96	2.3027	21 26 55.4	6.405	14	6 45 30.77	2.2581	24 6 15.1	0.251
15	4 57 53.13	2.3029	21 33 15.9	6.278	15	6 47 46.19	2.2558	24 6 26.4	0.126
16	5 0 11.31	2.3031	21 39 28.8	6.152	16	6 50 1.47	2.2536	24 6 30.2	+0.002
17	5 2 29.50	2.3032	21 45 34.1	6.024	17	6 52 16.62	2.2514	24 6 26.6	-0.121
18	5 4 47.69	2.3032	21 51 31.7	5.897	18	6 54 31.64	2.2491	24 6 15.7	0.244
19	5 7 5.89	2.3033	21 57 21.7	5.769	19	6 56 46.51	2.2467	24 5 57.3	0.368
20	5 9 24.09	2.3033	22 3 4.0	5.641	20	6 59 1.24	2.2442	24 5 31.5	0.450
21	5 11 42.29	2.3033	22 8 38.6	5.512	21	7 1 15.82	2.2417	24 4 58.5	0.612
22	5 14 0.49	2.3032	22 14 5.5	5.384	22	7 3 30.25	2.2392	24 4 18.1	0.734
23	5 16 18.68	2.3031	N.22 19 24.7	5.256	23	7 5 44.53	2.2367	N.24 3 30.4	0.856
WEDNESDAY 14.					FRIDAY 16.				
0	5 18 36.86	2.3029	N.22 24 36.2	5.127	0	7 7 58.65	2.2341	N.24 2 35.4	0.977
1	5 20 55.03	2.3027	22 29 39.9	4.997	1	7 10 12.62	2.2315	24 1 33.2	1.097
2	5 23 13.18	2.3024	22 34 35.9	4.869	2	7 12 26.43	2.2287	24 0 23.8	1.216
3	5 25 31.32	2.3021	22 39 24.2	4.740	3	7 14 40.07	2.2260	23 59 7.3	1.335
4	5 27 49.43	2.3017	22 44 4.7	4.610	4	7 16 53.55	2.2232	23 57 43.6	1.455
5	5 30 7.52	2.3012	22 48 37.4	4.481	5	7 19 6.86	2.2205	23 56 12.7	1.573
6	5 32 25.58	2.3008	22 53 2.4	4.352	6	7 21 20.01	2.2177	23 54 34.8	1.691
7	5 34 43.62	2.3003	22 57 19.6	4.222	7	7 23 32.98	2.2147	23 52 49.8	1.808
8	5 37 1.62	2.2997	23 1 29.0	4.092	8	7 25 45.78	2.2118	23 50 57.8	1.926
9	5 39 19.58	2.2991	23 5 30.7	3.963	9	7 27 58.40	2.2089	23 48 58.7	2.042
10	5 41 37.51	2.2984	23 9 24.6	3.833	10	7 30 10.85	2.2059	23 46 52.7	2.157
11	5 43 55.39	2.2977	23 13 10.7	3.703	11	7 32 23.11	2.2028	23 44 39.8	2.273
12	5 46 13.23	2.2969	23 16 49.0	3.573	12	7 34 35.19	2.1998	23 42 19.9	2.389
13	5 48 31.02	2.2961	23 20 19.5	3.444	13	7 36 47.09	2.1967	23 39 53.1	2.503
14	5 50 48.76	2.2952	23 23 42.3	3.315	14	7 38 58.80	2.1937	23 37 19.5	2.617
15	5 53 6.44	2.2942	23 26 57.3	3.185	15	7 41 10.33	2.1905	23 34 39.1	2.730
16	5 55 24.07	2.2933	23 30 4.5	3.056	16	7 43 21.66	2.1872	23 31 51.9	2.843
17	5 57 41.64	2.2922	23 33 4.0	2.927	17	7 45 32.80	2.1841	23 28 57.9	2.956
18	5 59 59.14	2.2911	23 35 55.7	2.797	18	7 47 43.75	2.1809	23 25 57.2	3.067
19	6 2 16.57	2.2900	23 38 39.6	2.667	19	7 49 54.51	2.1776	23 22 49.9	3.177
20	6 4 33.94	2.2888	23 41 15.8	2.539	20	7 52 5.06	2.1742	23 19 35.9	3.289
21	6 6 51.23	2.2875	23 43 44.3	2.410	21	7 54 15.42	2.1710	23 16 15.2	3.399
22	6 9 8.44	2.2862	23 45 5.0	2.281	22	7 56 25.58	2.1677	23 12 48.0	3.507
23	6 11 25.57	2.2848	23 48 18.0	2.152	23	7 58 35.54	2.1643	23 9 14.3	3.617
24	6 13 42.62	2.2834	N.23 50 23.3	2.024	24	8 0 45.30	2.1609	N.23 5 34.0	3.725

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 17.					MONDAY 19.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	8 0 45.30	2.1609	N. 23 5 34.0	3.725	0	9 40 24.84	1.9926	N. 18 14 5.5	8.170
1	8 2 54.85	2.1575	23 1 47.3	3.832	1	9 42 24.30	1.9893	18 5 53.0	8.246
2	8 5 4.20	2.1542	22 57 54.1	3.940	2	9 44 23.56	1.9861	17 57 36.0	8.322
3	8 7 13.35	2.1507	22 53 54.5	4.046	3	9 46 22.63	1.9828	17 49 14.4	8.397
4	8 9 22.29	2.1472	22 49 48.6	4.152	4	9 48 21.50	1.9797	17 40 48.4	8.471
5	8 11 31.02	2.1437	22 45 36.3	4.257	5	9 50 20.19	1.9766	17 32 17.9	8.545
6	8 13 39.54	2.1402	22 41 17.7	4.362	6	9 52 18.69	1.9734	17 23 43.0	8.618
7	8 15 47.85	2.1367	22 36 52.9	4.465	7	9 54 17.00	1.9703	17 15 3.7	8.691
8	8 17 55.95	2.1332	22 32 21.9	4.568	8	9 56 15.13	1.9672	17 6 20.1	8.762
9	8 20 3.84	2.1297	22 27 44.7	4.672	9	9 58 13.07	1.9642	16 57 32.2	8.834
10	8 22 11.51	2.1262	22 23 1.3	4.774	10	10 0 10.83	1.9612	16 48 40.0	8.905
11	8 24 18.98	2.1227	22 18 11.8	4.875	11	10 2 8.41	1.9582	16 39 43.6	8.975
12	8 26 26.23	2.1191	22 13 16.3	4.976	12	10 4 5.81	1.9552	16 30 43.0	9.044
13	8 28 33.27	2.1155	22 8 14.7	5.076	13	10 6 3.04	1.9523	16 21 38.3	9.112
14	8 30 40.09	2.1119	22 3 7.2	5.175	14	10 8 0.09	1.9493	16 12 29.5	9.180
15	8 32 46.70	2.1083	21 57 53.7	5.274	15	10 9 56.96	1.9465	16 3 16.7	9.247
16	8 34 53.09	2.1047	21 52 34.3	5.372	16	10 11 53.67	1.9437	15 53 59.9	9.313
17	8 36 59.27	2.1012	21 47 9.0	5.470	17	10 13 50.21	1.9409	15 44 39.1	9.380
18	8 39 5.23	2.0975	21 41 37.9	5.567	18	10 15 46.58	1.9382	15 35 14.3	9.446
19	8 41 10.97	2.0939	21 36 1.0	5.663	19	10 17 42.79	1.9354	15 25 45.6	9.510
20	8 43 16.50	2.0903	21 30 18.3	5.759	20	10 19 38.83	1.9327	15 16 13.1	9.574
21	8 45 21.81	2.0867	21 24 29.9	5.854	21	10 21 34.72	1.9301	15 6 36.7	9.637
22	8 47 26.91	2.0832	21 18 35.8	5.949	22	10 23 30.44	1.9274	14 56 56.6	9.700
23	8 49 31.79	2.0795	N. 21 12 36.0	6.042	23	10 25 26.01	1.9249	N. 14 47 12.7	9.762
SUNDAY 18.					TUESDAY 20.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	8 51 36.45	2.0759	N. 21 6 30.7	6.135	0	10 27 21.43	1.9223	N. 14 37 25.2	9.822
1	8 53 40.90	2.0723	21 0 19.8	6.227	1	10 29 16.69	1.9198	14 27 34.0	9.884
2	8 55 45.13	2.0687	20 54 3.4	6.319	2	10 31 11.81	1.9174	14 17 39.1	9.944
3	8 57 49.15	2.0652	20 47 41.5	6.410	3	10 33 6.78	1.9149	14 7 40.7	10.003
4	8 59 52.95	2.0616	20 41 14.2	6.500	4	10 35 1.60	1.9126	13 57 38.7	10.062
5	9 1 56.54	2.0581	20 34 41.5	6.590	5	10 36 56.29	1.9102	13 47 33.2	10.121
6	9 3 59.92	2.0545	20 28 3.4	6.679	6	10 38 50.83	1.9078	13 37 24.2	10.178
7	9 6 3.08	2.0509	20 21 20.0	6.767	7	10 40 45.23	1.9056	13 27 11.8	10.235
8	9 8 6.03	2.0473	20 14 31.3	6.856	8	10 42 39.50	1.9034	13 16 56.0	10.292
9	9 10 8.76	2.0437	20 7 37.3	6.943	9	10 44 33.64	1.9012	13 6 36.8	10.347
10	9 12 11.28	2.0403	20 0 38.1	7.029	10	10 46 27.64	1.8990	12 56 14.4	10.402
11	9 14 13.60	2.0368	19 53 33.8	7.115	11	10 48 21.52	1.8969	12 45 48.6	10.457
12	9 16 15.70	2.0332	19 46 24.3	7.200	12	10 50 15.27	1.8948	12 35 19.6	10.510
13	9 18 17.59	2.0298	19 39 9.8	7.284	13	10 52 8.90	1.8928	12 24 47.4	10.562
14	9 20 19.28	2.0263	19 31 50.2	7.368	14	10 54 2.41	1.8908	12 14 12.1	10.615
15	9 22 20.75	2.0228	19 24 25.6	7.452	15	10 55 55.80	1.8889	12 3 33.6	10.667
16	9 24 22.02	2.0194	19 16 56.0	7.534	16	10 57 49.08	1.8870	11 52 52.1	10.717
17	9 26 23.08	2.0160	19 9 21.5	7.616	17	10 59 42.24	1.8851	11 42 7.5	10.768
18	9 28 23.94	2.0126	19 1 42.1	7.697	18	11 1 35.29	1.8833	11 31 19.9	10.817
19	9 30 24.59	2.0092	18 53 57.9	7.777	19	11 3 28.24	1.8817	11 20 29.4	10.867
20	9 32 25.04	2.0058	18 46 8.9	7.857	20	11 5 21.09	1.8799	11 9 35.9	10.916
21	9 34 25.29	2.0025	18 38 15.1	7.936	21	11 7 13.83	1.8782	10 58 39.5	10.963
22	9 36 25.34	1.9992	18 30 16.6	8.014	22	11 9 6.47	1.8766	10 47 40.3	11.010
23	9 38 25.19	1.9958	18 22 13.4	8.092	23	11 10 59.02	1.8750	10 36 38.3	11.057
24	9 40 24.84	1.9926	N. 18 14 5.5	8.170	24	11 12 51.47	1.8734	N. 10 25 33.5	11.102

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 21.					FRIDAY 23.				
0	11 12 51.47	1.8734	N. 10 25 33.5	11.102	0	12 41' 57.80	1.8592	N. 0 52 38.3	12.501
1	11 14 43.83	1.8720	10 14 26.0	11.147	1	12 43 49.38	1.8602	0 40 7.9	12.512
2	11 16 36.11	1.8706	10 3 15.8	11.192	2	12 45 41.03	1.8613	0 27 36.8	12.523
3	11 18 28.30	1.8692	9 52 2.9	11.237	3	12 47 32.74	1.8624	0 15 5.1	12.533
4	11 20 20.41	1.8678	9 40 47.4	11.279	4	12 49 24.52	1.8637	N. 0 2 32.8	12.542
5	11 22 12.44	1.8665	9 29 29.4	11.321	5	12 51 16.38	1.8649	S. 0 10 0.0	12.551
6	11 24 4.39	1.8652	9 18 8.9	11.363	6	12 53 8.31	1.8662	0 22 33.3	12.558
7	11 25 56.27	1.8641	9 6 45.8	11.405	7	12 55 0.32	1.8676	0 35 7.0	12.565
8	11 27 48.08	1.8629	8 55 20.3	11.445	8	12 56 52.42	1.8690	0 47 41.1	12.572
9	11 29 39.82	1.8618	8 43 52.4	11.485	9	12 58 44.60	1.8703	1 0 15.6	12.577
10	11 31 31.50	1.8607	8 32 22.1	11.524	10	13 0 36.86	1.8718	1 12 50.3	12.580
11	11 33 23.11	1.8597	8 20 49.5	11.563	11	13 2 29.22	1.8735	1 25 25.2	12.583
12	11 35 14.67	1.8588	8 9 14.6	11.601	12	13 4 21.68	1.8751	1 38 0.4	12.587
13	11 37 6.17	1.8579	7 57 37.4	11.637	13	13 6 14.23	1.8767	1 50 35.7	12.589
14	11 38 57.62	1.8571	7 45 58.1	11.673	14	13 8 6.89	1.8785	2 3 11.1	12.590
15	11 40 49.02	1.8562	7 34 16.6	11.710	15	13 9 59.65	1.8802	2 15 46.5	12.590
16	11 42 40.37	1.8555	7 22 32.9	11.746	16	13 11 52.52	1.8822	2 28 21.9	12.590
17	11 44 31.68	1.8548	7 10 47.1	11.780	17	13 13 45.51	1.8841	2 40 57.3	12.589
18	11 46 22.95	1.8542	6 58 59.3	11.813	18	13 15 38.61	1.8860	2 53 32.6	12.587
19	11 48 14.18	1.8536	6 47 9.5	11.847	19	13 17 31.83	1.8880	3 6 7.7	12.583
20	11 50 5.38	1.8531	6 35 17.7	11.879	20	13 19 25.17	1.8901	3 18 42.6	12.579
21	11 51 56.55	1.8526	6 23 24.0	11.912	21	13 21 18.64	1.8922	3 31 17.2	12.574
22	11 53 47.69	1.8521	6 11 28.3	11.943	22	13 23 12.23	1.8943	3 43 51.5	12.568
23	11 55 38.80	1.8517	N. 5 59 30.8	11.972	23	13 25 5.96	1.8967	S. 3 56 25.4	12.562
THURSDAY 22.					SATURDAY 24.				
0	11 57 29.89	1.8513	N. 5 47 31.6	12.002	0	13 26 59.83	1.8989	S. 4 8 58.9	12.554
1	11 59 20.96	1.8511	5 35 30.6	12.032	1	13 28 53.83	1.9012	4 21 31.9	12.546
2	12 1 12.02	1.8508	5 23 27.8	12.060	2	13 30 47.98	1.9037	4 34 4.4	12.537
3	12 3 3.06	1.8507	5 11 23.4	12.087	3	13 32 42.27	1.9061	4 46 36.4	12.527
4	12 4 54.10	1.8506	4 59 17.3	12.114	4	13 34 36.71	1.9087	4 59 7.7	12.516
5	12 6 45.13	1.8505	4 47 9.7	12.140	5	13 36 31.31	1.9112	5 11 38.3	12.503
6	12 8 36.16	1.8504	4 35 0.5	12.167	6	13 38 26.06	1.9138	5 24 8.1	12.491
7	12 10 27.18	1.8504	4 22 49.7	12.192	7	13 40 20.97	1.9165	5 36 37.2	12.477
8	12 12 18.21	1.8506	4 10 37.5	12.215	8	13 42 16.04	1.9192	5 49 5.4	12.462
9	12 14 9.25	1.8507	3 58 23.9	12.238	9	13 44 11.28	1.9221	6 1 32.7	12.447
10	12 16 0.30	1.8509	3 46 8.9	12.261	10	13 46 6.69	1.9249	6 13 59.0	12.430
11	12 17 51.36	1.8511	3 33 52.6	12.283	11	13 48 2.27	1.9277	6 26 24.3	12.412
12	12 19 42.43	1.8513	3 21 34.9	12.305	12	13 49 58.02	1.9307	6 38 48.5	12.394
13	12 21 33.52	1.8517	3 9 16.0	12.325	13	13 51 53.95	1.9337	6 51 11.6	12.375
14	12 23 24.64	1.8522	2 56 55.9	12.345	14	13 53 50.07	1.9368	7 3 33.5	12.354
15	12 25 15.79	1.8527	2 44 34.6	12.365	15	13 55 46.37	1.9398	7 15 54.1	12.332
16	12 27 6.96	1.8531	2 32 12.3	12.382	16	13 57 42.85	1.9430	7 28 13.4	12.311
17	12 28 58.16	1.8537	2 19 48.8	12.400	17	13 59 39.53	1.9463	7 40 31.4	12.287
18	12 30 49.41	1.8544	2 7 24.3	12.417	18	14 1 36.41	1.9496	7 52 47.9	12.263
19	12 32 40.69	1.8550	1 54 58.8	12.432	19	14 3 33.48	1.9528	8 5 3.0	12.239
20	12 34 32.01	1.8557	1 42 32.4	12.447	20	14 5 30.75	1.9562	8 17 16.6	12.212
21	12 36 23.38	1.8566	1 30 5.1	12.462	21	14 7 28.22	1.9596	8 29 28.5	12.184
22	12 38 14.80	1.8574	1 17 37.0	12.476	22	14 9 25.90	1.9631	8 41 38.7	12.157
23	12 40 6.27	1.8583	1 5 8.0	12.489	23	14 11 23.79	1.9667	8 53 47.3	12.127
24	12 41 57.80	1.8592	N. 0 52 38.3	12.501	24	14 13 21.90	1.9702	S. 9 5 54.0	12.097

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 25.					TUESDAY 27.				
0	14 13 21.90	1.9702	S. 9 5 54.0	12.097	0	15 52 54.07	2.1907	S. 17 51 10.4	9.352
1	14 15 20.22	1.9738	9 17 58.9	12.066	1	15 55 5.67	2.1960	18 0 28.9	9.266
2	14 17 18.76	1.9775	9 30 1.9	12.033	2	15 57 17.59	2.2013	18 9 42.3	9.179
3	14 19 17.52	1.9812	9 42 2.9	12.000	3	15 59 29.83	2.2067	18 18 50.4	9.091
4	14 21 16.51	1.9850	9 54 1.9	11.966	4	16 1 42.39	2.2119	18 27 53.2	9.002
5	14 23 15.72	1.9888	10 5 58.8	11.930	5	16 3 55.26	2.2172	18 36 50.6	8.911
6	14 25 15.17	1.9927	10 17 53.5	11.894	6	16 6 8.45	2.2225	18 45 42.5	8.818
7	14 27 14.85	1.9967	10 29 46.1	11.857	7	16 8 21.96	2.2278	18 54 28.8	8.725
8	14 29 14.77	2.0007	10 41 36.3	11.817	8	16 10 35.79	2.2332	19 3 9.5	8.632
9	14 31 14.93	2.0047	10 53 24.2	11.778	9	16 12 49.94	2.2385	19 11 44.6	8.537
10	14 33 15.33	2.0087	11 5 9.7	11.738	10	16 15 4.41	2.2438	19 20 13.9	8.439
11	14 35 15.98	2.0128	11 16 52.8	11.697	11	16 17 19.20	2.2491	19 28 37.3	8.342
12	14 37 16.87	2.0169	11 28 33.3	11.653	12	16 19 34.30	2.2543	19 36 54.9	8.243
13	14 39 18.01	2.0212	11 40 11.2	11.609	13	16 21 49.72	2.2597	19 45 6.5	8.148
14	14 41 19.41	2.0255	11 51 46.4	11.563	14	16 24 5.46	2.2649	19 53 12.0	8.041
15	14 43 21.07	2.0297	12 3 18.8	11.517	15	16 26 21.51	2.2702	20 1 11.4	7.939
16	14 45 22.98	2.0341	12 14 48.5	11.471	16	16 28 37.88	2.2755	20 9 4.7	7.835
17	14 47 25.16	2.0385	12 26 15.3	11.422	17	16 30 54.57	2.2807	20 16 51.6	7.730
18	14 49 27.60	2.0428	12 37 39.2	11.372	18	16 33 11.57	2.2859	20 24 32.3	7.624
19	14 51 30.30	2.0472	12 49 0.0	11.322	19	16 35 28.88	2.2911	20 32 6.5	7.517
20	14 53 33.27	2.0518	13 0 17.8	11.271	20	16 37 46.50	2.2964	20 39 34.3	7.409
21	14 55 36.52	2.0564	13 11 32.5	11.217	21	16 40 4.43	2.3014	20 46 55.6	7.299
22	14 57 40.04	2.0609	13 22 43.9	11.163	22	16 42 22.67	2.3066	20 54 10.2	7.188
23	14 59 43.83	2.0655	S. 13 33 52.1	11.109	23	16 44 41.22	2.3117	S. 21 1 18.2	7.077
MONDAY 26.					WEDNESDAY 28.				
0	15 1 47.90	2.0702	S. 13 44 57.0	11.052	0	16 47 0.08	2.3168	S. 21 8 19.4	6.963
1	15 3 52.25	2.0749	13 55 58.4	10.995	1	16 49 19.24	2.3218	21 15 13.8	6.849
2	15 5 56.89	2.0797	14 6 56.4	10.937	2	16 51 38.70	2.3269	21 22 1.3	6.734
3	15 8 1.81	2.0843	14 17 50.9	10.877	3	16 53 58.47	2.3319	21 28 41.9	6.617
4	15 10 7.01	2.0892	14 28 41.7	10.816	4	16 56 18.53	2.3368	21 35 15.4	6.500
5	15 12 12.51	2.0941	14 39 28.8	10.754	5	16 58 38.89	2.3417	21 41 41.9	6.382
6	15 14 18.30	2.0989	14 50 12.2	10.692	6	17 0 59.54	2.3466	21 48 1.2	6.262
7	15 16 24.38	2.1037	15 0 51.8	10.627	7	17 3 20.48	2.3514	21 54 13.3	6.142
8	15 18 30.75	2.1087	15 11 27.4	10.561	8	17 5 41.71	2.3562	22 0 18.2	6.020
9	15 20 37.42	2.1137	15 21 59.1	10.495	9	17 8 3.23	2.3611	22 6 15.7	5.897
10	15 22 44.39	2.1186	15 32 26.8	10.427	10	17 10 25.04	2.3658	22 12 5.8	5.773
11	15 24 51.65	2.1236	15 42 50.3	10.357	11	17 12 47.13	2.3704	22 17 48.5	5.649
12	15 26 59.22	2.1287	15 53 9.7	10.287	12	17 15 9.49	2.3750	22 23 23.7	5.523
13	15 29 7.09	2.1337	16 3 24.8	10.216	13	17 17 32.13	2.3796	22 28 51.3	5.396
14	15 31 15.27	2.1388	16 13 35.6	10.143	14	17 19 55.04	2.3842	22 34 11.2	5.267
15	15 33 23.75	2.1439	16 23 42.0	10.070	15	17 22 18.23	2.3887	22 39 23.4	5.139
16	15 35 32.54	2.1491	16 33 44.0	9.996	16	17 24 41.68	2.3933	22 44 27.9	5.009
17	15 37 41.64	2.1542	16 43 41.5	9.919	17	17 27 5.39	2.3973	22 49 24.5	4.878
18	15 39 51.05	2.1594	16 53 34.3	9.841	18	17 29 29.36	2.4017	22 54 13.3	4.747
19	15 42 0.77	2.1646	17 3 22.4	9.762	19	17 31 53.59	2.4059	22 58 54.1	4.614
20	15 44 10.80	2.1698	17 13 5.8	9.683	20	17 34 18.07	2.4100	23 3 27.0	4.481
21	15 46 21.15	2.1751	17 22 44.4	9.602	21	17 36 42.79	2.4141	23 7 51.8	4.346
22	15 48 31.81	2.1802	17 32 18.0	9.519	22	17 39 7.76	2.4182	23 12 8.5	4.211
23	15 50 42.78	2.1855	17 41 46.7	9.437	23	17 41 32.97	2.4221	23 16 17.1	4.074
24	15 52 54.07	2.1907	S. 17 51 10.4	9.352	24	17 43 58.41	2.4260	S. 23 20 17.4	3.937

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 29.					SATURDAY 31.				
0	17 43 58.41	2.4260	S. 23 20 17.4	3.937	0	19 43 15.94	2.5077	S. 23 39 50.9	3.250
1	17 46 24.09	2.4298	23 24 9.5	3.799	1	19 45 46.38	2.5070	23 36 31.3	3.402
2	17 48 49.99	2.4335	23 27 53.3	3.661	2	19 48 16.78	2.5062	23 33 2.6	3.554
3	17 51 16.11	2.4372	23 31 28.8	3.522	3	19 50 47.13	2.5054	23 29 24.7	3.707
4	17 53 42.45	2.4408	23 34 55.9	3.381	4	19 53 17.43	2.5045	23 25 37.7	3.859
5	17 56 9.01	2.4443	23 38 14.5	3.239	5	19 55 47.67	2.5034	23 21 41.6	4.012
6	17 58 35.77	2.4477	23 41 24.6	3.098	6	19 58 17.84	2.5022	23 17 36.3	4.163
7	18 1 2.74	2.4511	23 44 26.2	2.956	7	20 0 47.94	2.5010	23 13 22.0	4.313
8	18 3 29.90	2.4543	23 47 19.3	2.812	8	20 3 17.96	2.4997	23 8 58.7	4.463
9	18 5 57.26	2.4576	23 50 3.7	2.667	9	20 5 47.90	2.4983	23 4 26.4	4.614
10	18 8 24.81	2.4607	23 52 39.4	2.523	10	20 8 17.76	2.4968	22 59 45.0	4.764
11	18 10 52.54	2.4637	23 55 6.5	2.378	11	20 10 47.52	2.4952	22 54 54.7	4.912
12	18 13 20.45	2.4667	23 57 24.8	2.232	12	20 13 17.19	2.4936	22 49 55.5	5.062
13	18 15 48.54	2.4695	23 59 34.3	2.086	13	20 15 46.75	2.4918	22 44 47.3	5.210
14	18 18 16.79	2.4722	24 1 35.1	1.938	14	20 18 16.21	2.4901	22 39 30.3	5.357
15	18 20 45.20	2.4748	24 3 26.9	1.790	15	20 20 45.56	2.4882	22 34 4.5	5.504
16	18 23 13.77	2.4774	24 5 9.9	1.642	16	20 23 14.79	2.4862	22 28 29.8	5.651
17	18 25 42.49	2.4799	24 6 44.0	1.494	17	20 25 43.91	2.4841	22 22 46.4	5.796
18	18 28 11.36	2.4823	24 8 9.2	1.344	18	20 28 12.90	2.4821	22 16 54.3	5.941
19	18 30 40.37	2.4847	24 9 25.3	1.194	19	20 30 41.76	2.4799	22 10 53.5	6.085
20	18 33 9.52	2.4868	24 10 32.5	1.045	20	20 33 10.49	2.4777	22 4 44.1	6.229
21	18 35 38.79	2.4889	24 11 30.7	0.894	21	20 35 39.08	2.4753	21 58 26.0	6.372
22	18 38 8.19	2.4909	24 12 19.8	0.742	22	20 38 7.53	2.4730	21 51 59.4	6.514
23	18 40 37.70	2.4927	S. 24 12 59.8	0.592	23	20 40 35.84	2.4706	S. 21 45 24.3	6.656
FRIDAY 30.					SUNDAY, NOVEMBER 1.				
0	18 43 7.32	2.4946	S. 24 13 30.8	0.440	0	20 43 4.00	2.4681	S. 21 38 40.7	6.797
1	18 45 37.05	2.4963	24 13 52.6	0.287					
2	18 48 6.88	2.4979	24 14 5.3	-0.135					
3	18 50 36.80	2.4993	24 14 8.8	+0.018					
4	18 53 6.80	2.5007	24 14 3.1	0.171					
5	18 55 36.89	2.5022	24 13 48.3	0.323					
6	18 58 7.06	2.5033	24 13 24.3	0.477					
7	19 0 37.29	2.5044	24 12 51.0	0.632					
8	19 3 7.59	2.5054	24 12 8.5	0.785					
9	19 5 37.94	2.5062	24 11 16.8	0.938					
10	19 8 8.34	2.5071	24 10 15.9	1.092					
11	19 10 38.79	2.5078	24 9 5.7	1.247					
12	19 13 9.28	2.5084	24 7 46.2	1.402					
13	19 15 39.80	2.5089	24 6 17.5	1.556					
14	19 18 10.35	2.5092	24 4 39.5	1.711					
15	19 20 40.91	2.5095	24 2 52.2	1.865					
16	19 23 11.49	2.5097	24 0 55.7	2.019					
17	19 25 42.08	2.5098	23 58 49.9	2.173					
18	19 28 12.67	2.5098	23 56 34.9	2.327					
19	19 30 43.26	2.5097	23 54 10.6	2.482					
20	19 33 13.84	2.5095	23 51 37.1	2.635					
21	19 35 44.40	2.5092	23 48 54.4	2.789					
22	19 38 14.94	2.5088	23 46 2.4	2.942					
23	19 40 45.46	2.5083	23 43 1.3	3.096					
24	19 43 15.94	2.5077	S. 23 39 50.9	3.250					

PHASES OF THE MOON.

		d	h	m
☾	First Quarter	Oct.	2	18 13.7
○	Full Moon		9	9 3.4
☾	Last Quarter		16	15 35.4
●	New Moon		24	18 46.6

		d	h
☾	Perigee	Oct.	7 15.9
☾	Apogee		19 14.1

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	SUN W.	68 7 5	2942	69 38 30	2929	71 10 12	2916	72 42 10	2903
	Fomalhaut E.	77 55 7	2782	76 20 15	2773	74 45 11	2764	73 9 56	2756
	α Pegasi E.	95 27 17	2996	93 56 59	2982	92 26 24	2970	90 55 33	2958
	SATURN E.	110 39 47	2564	109 0 3	2553	107 20 3	2541	105 39 47	2529
2	SUN W.	80 26 15	2836	81 59 56	2823	83 33 54	2809	85 8 10	2795
	Fomalhaut E.	65 11 6	2719	63 34 52	2714	61 58 31	2709	60 22 3	2705
	α Pegasi E.	83 17 41	2904	81 45 27	2895	80 13 2	2887	78 40 27	2880
	SATURN E.	97 14 17	2468	95 32 19	2456	93 50 4	2443	92 7 31	2431
3	SUN W.	93 4 4	2726	94 40 9	2712	96 16 33	2698	97 53 15	2685
	Antares W.	34 34 21	2469	36 16 18	2449	37 58 43	2430	39 41 35	2413
	Fomalhaut E.	52 18 45	2699	50 42 4	2702	49 5 27	2707	47 28 56	2714
	α Pegasi E.	70 55 24	2854	69 22 6	2852	67 48 45	2851	66 15 23	2852
	SATURN E.	83 30 15	2367	81 45 53	2355	80 1 13	2342	78 16 14	2329
	α Arietis E.	113 17 31	2541	111 37 15	2525	109 56 37	2509	108 15 37	2493
4	SUN W.	106 1 19	2618	107 39 50	2605	109 18 38	2592	110 57 44	2580
	Antares W.	48 21 51	2333	50 7 2	2318	51 52 35	2304	53 38 29	2290
	α Pegasi E.	58 29 23	2880	56 56 38	2891	55 24 8	2906	53 51 57	2924
	SATURN E.	69 26 44	2267	67 39 56	2254	65 52 49	2242	64 5 24	2230
	α Arietis E.	99 45 11	2420	98 2 5	2407	96 18 40	2394	94 34 56	2380
5	SUN W.	119 17 24	2521	120 58 8	2511	122 39 6	2500	124 20 19	2490
	Antares W.	62 32 55	2226	64 20 44	2215	66 8 49	2203	67 57 12	2192
	SATURN E.	55 4 4	2175	53 14 59	2165	51 25 38	2155	49 36 2	2145
	α Arietis E.	85 51 53	2324	84 6 29	2315	82 20 51	2306	80 34 59	2297
	Aldebaran E.	116 46 57	2204	114 58 35	2193	113 9 57	2182	111 21 3	2172
6	Antares W.	77 2 55	2145	78 52 45	2137	80 42 47	2130	82 33 0	2124
	SATURN E.	40 24 37	2103	38 33 43	2097	36 42 39	2091	34 51 26	2085
	α Arietis E.	71 42 51	2264	69 55 59	2260	68 9 1	2257	66 21 58	2255
	Aldebaran E.	102 12 51	2128	100 22 33	2120	98 32 4	2113	96 41 24	2105
7	Antares W.	91 46 23	2098	93 37 25	2095	95 28 32	2092	97 19 43	2090
	α Aquilæ W.	51 25 51	3355	52 48 59	3290	54 13 22	3231	55 38 55	3177
	α Arietis E.	57 26 28	2261	55 39 31	2266	53 52 42	2273	52 6 3	2282
	Aldebaran E.	87 25 45	2081	85 34 16	2078	83 42 42	2075	81 51 4	2073
8	Antares W.	106 35 59	2092	108 27 10	2095	110 18 18	2098	112 9 21	2101
	α Aquilæ W.	63 0 40	2984	64 31 12	2958	66 2 18	2935	67 33 53	2915
	Aldebaran E.	72 32 29	2073	70 40 48	2075	68 49 10	2078	66 57 36	2081
	Pollux E.	116 40 56	2081	114 49 28	2083	112 58 2	2084	111 6 38	2086
9	α Aquilæ W.	75 16 56	2857	76 50 10	2853	78 23 31	2851	79 56 53	2850
	Fomalhaut W.	40 14 17	2552	41 54 18	2526	43 34 55	2506	45 16 0	2490
	Aldebaran E.	57 41 29	2109	55 50 43	2116	54 0 9	2125	52 9 48	2134
	Pollux E.	101 51 3	2111	100 0 20	2118	98 9 48	2125	96 19 27	2133
10	α Aquilæ W.	87 42 57	2879	89 15 43	2891	90 48 14	2904	92 20 29	2919
	Fomalhaut W.	53 45 34	2454	55 27 52	2453	57 10 12	2454	58 52 30	2458
	α Pegasi W.	40 23 51	2260	41 48 49	2198	43 15 1	2143	44 42 19	2096

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVb	P. L. of Diff.	XVIIIb	P. L. of Diff.	XXIb	P. L. of Diff.
1	SUN W.	74 14 25	2890	75 46 57	2877	77 19 45	2865	78 52 51	2849
	Fomalhaut E.	71 34 30	2748	69 58 54	2740	68 23 7	2733	66 47 11	2726
	α Pegasi E.	89 24 27	2946	87 53 6	2935	86 21 31	2924	84 49 42	2914
	SATURN E.	103 59 15	2517	102 18 26	2505	100 37 20	2493	98 55 57	2481
2	SUN W.	86 42 45	2781	88 17 37	2767	89 52 48	2753	91 28 17	2740
	Fomalhaut E.	58 45 30	2701	57 8 52	2699	55 32 10	2698	53 55 27	2698
	α Pegasi E.	77 7 42	2873	75 34 48	2867	74 1 46	2864	72 28 38	2857
	SATURN E.	90 24 40	2418	88 41 31	2405	86 58 4	2393	85 14 19	2380
3	SUN W.	99 30 15	2671	101 7 34	2657	102 45 11	2644	104 23 6	2631
	Antares W.	41 24 51	2396	43 8 31	2380	44 52 35	2364	46 37 2	2348
	Fomalhaut E.	45 52 35	2724	44 16 26	2737	42 40 34	2753	41 5 2	2771
	α Pegasi E.	64 42 2	2853	63 8 43	2856	61 35 28	2868	60 2 20	2870
	SATURN E.	76 30 57	2316	74 45 21	2304	72 59 27	2291	71 13 15	2279
	α Arietis E.	106 34 14	2478	104 52 30	2465	103 10 24	2448	101 27 58	2434
4	SUN W.	112 37 7	2568	114 16 47	2556	115 56 43	2544	117 36 55	2532
	Antares W.	55 24 44	2277	57 11 18	2264	58 58 12	2251	60 45 24	2238
	α Pegasi E.	52 20 9	2946	50 48 48	2972	49 18 0	3002	47 47 49	3026
	SATURN E.	62 17 42	2218	60 29 42	2207	58 41 26	2196	56 52 53	2186
	α Arietis E.	92 50 53	2368	91 6 33	2357	89 21 56	2346	87 37 2	2335
5	SUN W.	126 1 46	2481	127 43 25	2472	129 25 17	2464	131 7 20	2456
	Antares W.	69 45 51	2182	71 34 45	2172	73 23 54	2163	75 13 18	2154
	SATURN E.	47 46 12	2136	45 56 8	2127	44 5 50	2119	42 15 20	2111
	α Arietis E.	78 48 55	2289	77 2 39	2282	75 16 12	2275	73 29 36	2269
	Aldebaran E.	109 31 53	2162	107 42 28	2153	105 52 49	2144	104 2 56	2136
6	Antares W.	84 23 23	2118	86 13 56	2112	88 4 37	2107	89 55 26	2102
	SATURN E.	33 0 4	2080	31 8 35	2076	29 16 59	2073	27 25 18	2072
	α Arietis E.	64 34 52	2253	62 47 44	2253	61 0 36	2255	59 13 30	2258
	Aldebaran E.	94 50 33	2099	92 59 33	2094	91 8 24	2089	89 17 8	2085
7	Antares W.	99 10 57	2089	101 2 13	2089	102 53 29	2089	104 44 45	2090
	α Aquilæ W.	57 5 32	3129	58 33 6	3087	60 1 32	3048	61 30 45	3014
	α Arietis E.	50 19 37	2293	48 33 27	2305	46 47 35	2320	45 2 5	2338
	Aldebaran E.	79 59 23	2072	78 7 40	2071	76 15 56	2071	74 24 12	2072
8	Antares W.	114 0 19	2106	115 51 9	2111	117 41 51	2117	119 32 23	2124
	α Aquilæ W.	69 5 53	2898	70 38 15	2883	72 10 55	2872	73 43 50	2863
	Aldebaran E.	65 6 8	2085	63 14 46	2090	61 23 32	2096	59 32 26	2102
	Pollux E.	109 15 18	2090	107 24 3	2094	105 32 55	2099	103 41 55	2105
9	α Aquilæ W.	81 30 16	2852	83 3 36	2856	84 36 51	2862	86 9 59	2869
	Fomalhaut W.	46 57 27	2477	48 39 12	2467	50 21 11	2461	52 3 19	2457
	Aldebaran E.	50 19 40	2144	48 29 47	2154	46 40 10	2165	44 50 50	2176
	Pollux E.	94 29 18	2142	92 39 23	2152	90 49 43	2162	89 0 18	2173
10	α Aquilæ W.	93 52 25	2935	95 24 0	2954	96 55 11	2973	98 25 58	2994
	Fomalhaut W.	60 34 43	2462	62 16 49	2468	63 58 48	2475	65 40 37	2483
	α Pegasi W.	46 10 33	3057	47 39 35	3024	49 9 18	2997	50 39 35	2975

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
10	SATURN W.	19 25 20	2176	21 14 23	2183	23 3 16	2192	24 51 56	2202
	Aldebaran E.	43 1 47	2189	41 13 3	2203	39 24 40	2217	37 36 38	2232
	Pollux E.	87 11 9	2184	85 22 17	2196	83 33 43	2208	81 45 27	2220
11	α Aquilæ W.	99 56 19	3018	101 26 10	3043	102 55 31	3069	104 24 19	3097
	Fomalhaut W.	67 22 14	2492	69 3 38	2503	70 44 47	2514	72 25 41	2526
	α Pegasi W.	52 10 20	2957	53 41 28	2942	55 12 55	2930	56 44 37	2921
	SATURN W.	33 51 2	2265	35 37 53	2279	37 24 23	2294	39 10 31	2309
	Pollux E.	72 49 11	2293	71 3 1	2309	69 17 14	2325	67 31 51	2341
	JUPITER E.	116 5 31	2346	114 20 38	2362	112 36 8	2378	110 52 1	2393
12	Fomalhaut W.	80 45 40	2597	82 24 39	2613	84 3 16	2629	85 41 31	2646
	α Pegasi W.	64 24 44	2914	65 56 45	2918	67 28 41	2924	69 0 30	2931
	SATURN W.	47 55 27	2391	49 39 14	2408	51 22 37	2426	53 5 35	2443
	Pollux E.	58 51 0	2429	57 8 6	2446	55 25 37	2465	53 43 35	2484
	JUPITER E.	102 17 13	2477	100 35 28	2495	98 54 8	2513	97 13 13	2531
13	Fomalhaut W.	93 46 56	2736	95 22 48	2755	96 58 15	2774	98 33 17	2794
	α Pegasi W.	76 36 55	2981	78 7 31	2994	79 37 51	3008	81 7 54	3022
	SATURN W.	61 34 15	2531	63 14 45	2549	64 54 49	2567	66 34 29	2584
	α Arietis W.	32 59 24	3002	34 29 34	2985	36 0 6	2971	37 30 55	2961
	Pollux E.	45 20 1	2580	43 40 38	2600	42 1 43	2620	40 23 15	2640
	JUPITER E.	88 54 49	2621	87 16 23	2639	85 38 22	2657	84 0 45	2675
	MARS E.	114 45 58	2779	113 11 2	2798	111 36 32	2817	110 2 26	2835
	SUN E.	132 22 55	2914	130 50 54	2932	129 19 16	2951	127 48 2	2969
14	Fomalhaut W.	106 21 59	2894	107 54 26	2915	109 26 26	2936	110 57 59	2956
	α Pegasi W.	88 33 35	3101	90 1 44	3117	91 29 33	3134	92 57 1	3152
	SATURN W.	74 46 52	2672	76 24 10	2688	78 1 6	2704	79 37 40	2721
	α Arietis W.	45 6 55	2952	46 38 9	2956	48 9 17	2960	49 40 20	2965
	JUPITER E.	75 58 42	2765	74 23 28	2782	72 48 37	2799	71 14 8	2815
	MARS E.	102 17 48	2926	100 46 2	2944	99 14 39	2961	97 43 37	2978
	SUN E.	120 17 33	3060	118 48 35	3078	117 19 58	3095	115 51 42	3113
15	α Pegasi W.	100 8 54	3246	101 34 9	3265	102 59 2	3285	104 23 31	3305
	SATURN W.	87 35 11	2798	89 9 41	2813	90 43 51	2828	92 17 43	2842
	α Arietis W.	57 13 32	3003	58 43 41	3012	60 13 38	3021	61 43 25	3030
	Aldebaran W.	25 17 4	2268	26 50 4	2279	28 22 50	2289	29 55 23	2299
	JUPITER E.	63 27 3	2897	61 54 40	2912	60 22 36	2927	58 50 51	2941
	MARS E.	90 13 47	3061	88 44 50	3076	87 16 11	3091	85 47 51	3106
	SUN E.	108 35 35	3195	107 9 21	3211	105 43 25	3226	104 17 47	3242
16	SATURN W.	100 2 43	2905	101 34 55	2917	103 6 52	2928	104 38 35	2939
	α Arietis W.	69 9 30	3075	70 38 9	3084	72 6 38	3093	73 34 56	3101
	Aldebaran W.	37 34 49	2951	39 6 3	2962	40 37 4	2972	42 7 52	2981
	JUPITER E.	51 16 31	3009	49 46 29	3021	48 16 42	3033	46 47 11	3043
	MARS E.	78 30 30	3174	77 3 50	3186	75 37 25	3198	74 11 14	3209
	SUN E.	97 13 54	3310	95 49 55	3323	94 26 10	3335	93 2 39	3346
17	SATURN W.	112 13 58	2985	113 44 29	2993	115 14 50	3001	116 45 1	3009
	α Arietis W.	80 53 59	3141	82 21 19	3148	83 48 31	3154	85 15 35	3161
	Aldebaran W.	49 39 6	3023	51 8 50	3030	52 38 25	3037	54 7 52	3043

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
10	SATURN W.	26 40 20	2213	28 28 28	2225	30 16 19	2238	32 3 50	2251
	Aldebaran E.	35 48 58	2247	34 1 41	2264	32 14 49	2282	30 28 23	2300
	Pollux E.	79 57 30	2234	78 9 53	2249	76 22 38	2263	74 35 44	2278
11	α Aquilæ W.	105 52 33	3127	107 20 10	3159	108 47 8	3193	110 13 26	3229
	Fomalhaut W.	74 6 18	2539	75 46 37	2552	77 26 38	2566	79 6 19	2581
	α Pegasi W.	58 16 29	2915	59 48 29	2912	61 20 33	2910	62 52 39	2911
	SATURN W.	40 56 17	2325	42 41 40	2341	44 26 39	2357	46 11 15	2374
	Pollux E.	65 46 51	2358	64 2 16	2375	62 18 6	2392	60 34 20	2410
	JUPITER E.	109 8 16	2410	107 24 55	2426	105 41 57	2443	103 59 23	2460
12	Fomalhaut W.	87 19 24	2663	88 56 53	2681	90 33 58	2699	92 10 39	2717
	α Pegasi W.	70 32 11	2939	72 3 41	2948	73 34 58	2958	75 6 3	2969
	SATURN W.	54 48 9	2460	56 30 18	2478	58 12 1	2496	59 53 20	2513
	Pollux E.	52 1 59	2503	50 20 50	2522	48 40 7	2541	46 59 51	2560
	JUPITER E.	95 32 42	2549	93 52 37	2566	92 12 56	2585	90 33 40	2603
13	Fomalhaut W.	100 7 53	2814	101 42 3	2833	103 15 48	2853	104 49 6	2873
	α Pegasi W.	82 37 40	3037	84 7 7	3052	85 36 16	3068	87 5 5	3084
	SATURN W.	68 13 46	2602	69 52 38	2620	71 31 6	2637	73 9 11	2655
	α Arietis W.	39 1 57	2954	40 33 7	2950	42 4 22	2949	43 35 39	2950
	Pollux E.	38 45 15	2660	37 7 42	2681	35 30 37	2702	33 54 0	2722
	JUPITER E.	82 23 32	2694	80 46 44	2712	79 10 20	2729	77 34 19	2747
	MARS E.	108 28 43	2853	106 55 24	2872	105 22 29	2890	103 49 57	2908
	SUN E.	126 17 11	2988	124 46 43	3006	123 16 37	3024	121 46 54	3042
14	Fomalhaut W.	112 29 7	2977	113 59 48	3000	115 30 1	3021	116 59 47	3042
	α Pegasi W.	94 24 7	3170	95 50 52	3188	97 17 15	3207	98 43 16	3226
	SATURN W.	81 13 52	2737	82 49 43	2753	84 25 12	2768	86 0 21	2783
	α Arietis W.	51 11 17	2972	52 42 5	2980	54 12 43	2987	55 43 12	2995
	JUPITER E.	69 40 0	2832	68 6 14	2849	66 32 50	2865	64 59 46	2881
	MARS E.	96 12 57	2995	94 42 39	3012	93 12 41	3029	91 43 4	3045
	SUN E.	114 23 48	3130	112 56 15	3147	111 29 2	3163	110 2 9	3179
15	α Pegasi W.	105 47 37	3225	107 11 19	3246	108 34 37	3267	109 57 31	3287
	SATURN W.	93 51 17	2855	95 24 33	2868	96 57 33	2881	98 30 16	2894
	α Arietis W.	63 13 0	3039	64 42 24	3048	66 11 37	3057	67 40 39	3066
	Aldebaran W.	31 27 43	2910	32 59 49	2920	34 31 42	2931	36 3 22	2941
	JUPITER E.	57 19 24	2955	55 48 15	2969	54 17 24	2982	52 46 49	2996
	MARS E.	84 19 49	3120	82 52 5	3134	81 24 37	3148	79 57 26	3161
	SUN E.	102 52 27	3257	101 27 25	3271	100 2 39	3284	98 38 9	3297
16	SATURN W.	106 10 4	2949	107 41 20	2959	109 12 24	2968	110 43 17	2977
	α Arietis W.	75 3 4	3110	76 31 2	3118	77 58 50	3125	79 26 29	3133
	Aldebaran W.	43 38 29	2990	45 8 54	2999	46 39 8	3007	48 9 12	3015
	JUPITER E.	45 17 54	3056	43 48 51	3067	42 20 1	3078	40 51 24	3088
	MARS E.	72 45 16	3220	71 19 31	3231	69 54 0	3241	68 28 40	3251
	SUN E.	91 39 21	3358	90 16 16	3369	88 53 24	3379	87 30 43	3388
17	SATURN W.	118 15 3	3016	119 44 57	3022	121 14 43	3027	122 44 22	3032
	α Arietis W.	86 42 32	3166	88 9 21	3172	89 36 4	3178	91 2 40	3183
	Aldebaran W.	55 37 11	3049	57 6 23	3055	58 35 27	3060	60 4 25	3065

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
17	JUPITER E.	39 23 0	3098	37 54 48	3107	36 26 47	3117	34 58 58	3126
	MARS E.	67 3 31	3260	65 38 33	3269	64 13 46	3276	62 49 7	3284
	SUN E.	86 8 12	3397	84 45 52	3406	83 23 43	3414	82 1 42	3422
18	α Arietis W.	92 29 10	3188	93 55 33	3193	95 21 51	3197	96 48 4	3201
	Aldebaran W.	61 33 17	3069	63 2 4	3073	64 30 46	3076	65 59 24	3079
	JUPITER E.	27 42 40	3172	26 15 56	3181	24 49 24	3191	23 23 3	3202
	MARS E.	55 48 1	3316	54 24 9	3321	53 0 22	3326	51 36 41	3330
	SUN E.	75 13 38	3453	73 52 21	3457	72 31 9	3461	71 10 2	3465
19	α Arietis W.	103 58 4	3217	105 23 53	3220	106 49 39	3222	108 15 23	3224
	Aldebaran W.	73 21 51	3087	74 50 16	3088	76 18 39	3088	77 47 3	3087
	Pollux W.	29 22 43	3134	30 50 11	3131	32 17 43	3127	33 45 21	3123
	MARS E.	44 39 16	3345	43 15 57	3346	41 52 39	3348	40 29 23	3349
	SUN E.	64 25 18	3477	63 4 28	3478	61 43 39	3478	60 22 50	3478
20	Aldebaran W.	85 9 21	3080	86 37 55	3077	88 6 33	3073	89 35 15	3070
	Pollux W.	41 4 40	3102	42 32 47	3098	44 0 59	3093	45 29 17	3088
	SUN E.	53 38 38	3472	52 17 43	3470	50 56 45	3467	49 35 44	3464
21	Aldebaran W.	96 59 53	3048	98 29 6	3043	99 58 25	3038	101 27 51	3032
	Pollux W.	52 52 21	3060	54 21 19	3054	55 50 24	3048	57 19 37	3041
	SUN E.	42 49 45	3446	41 28 20	3441	40 6 50	3437	38 45 15	3432
22	Aldebaran W.	108 56 54	3000	110 27 7	2993	111 57 29	2985	113 28 0	2978
	Pollux W.	64 47 49	3005	66 17 55	2998	67 48 10	2990	69 18 35	2982
	SUN E.	31 56 1	3408	30 33 54	3404	29 11 43	3400	27 49 27	3397
27	SUN W.	26 18 45	3042	27 48 6	3027	29 17 46	3013	30 47 43	3000
	Fomalhaut E.	93 20 36	2821	91 46 35	2812	90 12 23	2804	88 38 0	2796
	α Pegasi E.	110 8 42	3105	108 40 38	3088	107 12 13	3072	105 43 29	3056
	SATURN E.	124 54 33	2624	123 16 11	2615	121 37 36	2606	119 58 49	2598
28	SUN W.	38 21 19	2942	39 52 45	2931	41 24 25	2921	42 56 18	2911
	Fomalhaut E.	80 43 33	2760	79 8 12	2754	77 32 43	2748	75 57 7	2743
	α Pegasi E.	98 15 19	2990	96 44 54	2979	95 14 15	2969	93 43 23	2960
	SATURN E.	111 42 5	2556	110 2 10	2548	108 22 4	2540	106 41 46	2533
29	SUN W.	50 38 50	2862	52 11 57	2853	53 45 16	2844	55 18 47	2835
	Fomalhaut E.	67 57 35	2724	66 21 27	2722	64 45 16	2720	63 9 3	2719
	α Pegasi E.	86 6 22	2922	84 34 31	2917	83 2 34	2912	81 30 30	2908
	SATURN E.	98 17 35	2493	96 36 12	2485	94 54 38	2477	93 12 53	2470
30	SUN W.	63 9 16	2791	64 43 56	2782	66 18 47	2773	67 53 50	2765
	Fomalhaut E.	55 7 59	2728	53 31 56	2733	51 55 59	2739	50 20 11	2747
	α Pegasi E.	73 49 14	2900	72 16 55	2901	70 44 37	2903	69 12 22	2907
	SATURN E.	84 41 27	2432	82 58 38	2424	81 15 38	2417	79 32 27	2410
31	SUN W.	75 51 51	2723	77 28 0	2715	79 4 20	2707	80 40 51	2704
	Fomalhaut E.	42 24 44	2821	40 50 43	2815	39 17 14	2813	37 44 21	2806
	α Pegasi E.	61 32 44	2943	60 1 20	2956	58 30 12	2971	56 59 22	2988
	SATURN E.	70 53 54	2373	69 9 40	2366	67 25 16	2358	65 40 41	2351

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
17	JUPITER	E.	33 31 21	3135	32 3 54	3145	30 36 39	3154	29 9 34	3163
	MARS	E.	61 24 38	3292	60 0 17	3300	58 36 5	3306	57 12 0	3311
	SUN	E.	80 39 50	3429	79 18 6	3436	77 56 30	3442	76 35 1	3448
18	α Arietis	W.	98 14 12	3205	99 40 15	3208	101 6 15	3211	102 32 11	3214
	Aldebaran	W.	67 27 59	3082	68 56 30	3084	70 24 59	3086	71 53 26	3087
	JUPITER	E.	21 56 56	3214	20 31 3	3227	19 5 26	3242	17 40 6	3259
	MARS	E.	50 13 4	3334	48 49 32	3337	47 26 3	3340	46 2 38	3343
	SUN	E.	69 48 59	3468	68 28 0	3471	67 7 4	3473	65 46 10	3475
19	α Arietis	W.	109 41 4	3226	111 6 43	3228	112 32 19	3229	113 57 54	3231
	Aldebaran	W.	79 15 28	3087	80 43 54	3086	82 12 20	3084	83 40 49	3082
	Pollux	W.	35 13 3	3119	36 40 50	3115	38 8 41	3110	39 36 38	3106
	MARS	E.	39 6 8	3349	37 42 53	3350	36 19 39	3351	34 56 26	3350
	SUN	E.	59 2 1	3478	57 41 12	3477	56 20 22	3476	54 59 31	3474
20	Aldebaran	W.	91 4 1	3067	92 32 51	3063	94 1 46	3058	95 30 47	3053
	Pollux	W.	46 57 41	3083	48 26 11	3078	49 54 47	3072	51 23 30	3066
	SUN	E.	48 14 40	3461	46 53 32	3458	45 32 21	3454	44 11 5	3450
21	Aldebaran	W.	102 57 24	3026	104 27 5	3020	105 56 53	3014	107 26 49	3006
	Pollux	W.	58 48 58	3034	60 18 28	3028	61 48 6	3021	63 17 53	3013
	SUN	E.	37 23 35	3427	36 1 49	3423	34 39 58	3418	33 18 2	3413
22	Aldebaran	W.	114 58 40	2970	116 29 30	2963	118 0 29	2955	119 31 38	2946
	Pollux	W.	70 49 10	2974	72 19 55	2966	73 50 50	2957	75 21 56	2948
	SUN	E.	26 27 7	3394	25 4 44	3393	23 42 20	3393	22 19 55	3392
27	SUN	W.	32 17 56	2988	33 48 24	2975	35 19 8	2964	36 50 7	2953
	Fomalhaut	E.	87 3 26	2788	85 28 42	2780	83 53 48	2773	82 18 45	2766
	α Pegasi	E.	104 14 26	3041	102 45 4	3027	101 15 25	3014	99 45 30	3002
	SATURN	E.	118 19 51	2590	116 40 42	2581	115 1 21	2573	113 21 49	2564
28	SUN	W.	44 28 23	2901	46 0 41	2891	47 33 11	2881	49 5 54	2871
	Fomalhaut	E.	74 21 24	2738	72 45 35	2734	71 9 40	2730	69 33 40	2727
	α Pegasi	E.	92 12 20	2951	90 41 5	2942	89 9 40	2935	87 38 5	2928
	SATURN	E.	105 1 18	2525	103 20 39	2517	101 39 49	2509	99 58 47	2501
29	SUN	W.	56 52 30	2826	58 26 24	2817	60 0 30	2808	61 34 47	2799
	Fomalhaut	E.	61 32 48	2719	59 56 33	2719	58 20 19	2721	56 44 7	2724
	α Pegasi	E.	79 58 21	2905	78 26 8	2902	76 53 52	2900	75 21 33	2900
	SATURN	E.	91 30 57	2468	89 48 51	2455	88 6 34	2447	86 24 6	2439
30	SUN	W.	69 29 4	2756	71 4 29	2748	72 40 5	2740	74 15 53	2732
	Fomalhaut	E.	48 44 34	2757	47 9 10	2769	45 34 2	2783	43 59 12	2800
	α Pegasi	E.	67 40 12	2921	66 8 7	2917	64 36 9	2924	63 4 21	2933
	SATURN	E.	77 49 6	2402	76 5 34	2394	74 21 51	2387	72 37 58	2380
31	SUN	W.	82 17 33	2690	83 54 26	2683	85 31 29	2675	87 8 43	2667
	Fomalhaut	E.	36 12 11	2946	34 40 51	2995	33 10 32	3052	31 41 23	3117
	α Pegasi	E.	55 28 54	3007	53 58 50	3029	52 29 12	3054	51 0 6	3083
	SATURN	E.	63 55 55	2344	62 11 0	2337	60 25 54	2330	58 40 38	2322

AT GREENWICH APPARENT NOON.

AT GREENWICH APPARENT NOON.										
Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.				
		h m s	s	° ' "	"	' "	s	m s	s	
SUN.	1	14 25 7.34	9.791	S. 14 23 49.2	-48.18	16 9.18	66.88	16 18.83	0.066	
Mon.	2	14 29 2.71	9.824	14 42 58.5	47.59	16 9.43	67.00	16 20.01	0.033	
Tues.	3	14 32 58.87	9.856	15 1 53.6	46.98	16 9.68	67.11	16 20.41	0.000	
Wed.	4	14 36 55.82	9.890	15 20 33.8	-46.35	16 9.93	67.23	16 20.01	0.034	
Thur.	5	14 40 53.58	9.924	15 38 58.7	45.71	16 10.18	67.35	16 18.81	0.068	
Frid.	6	14 44 52.16	9.958	15 57 8.0	45.05	16 10.42	67.47	16 16.79	0.102	
Sat.	7	14 48 51.57	9.993	16 15 1.3	-44.38	16 10.66	67.59	16 13.94	0.136	
SUN.	8	14 52 51.82	10.028	16 32 38.2	43.69	16 10.90	67.71	16 10.25	0.171	
Mon.	9	14 56 52.92	10.064	16 49 58.5	42.99	16 11.13	67.83	16 5.72	0.206	
Tues.	10	15 0 54.87	10.099	17 7 1.5	-42.27	16 11.35	67.95	16 0.34	0.242	
Wed.	11	15 4 57.68	10.135	17 23 47.1	41.53	16 11.57	68.07	15 54.11	0.278	
Thur.	12	15 9 1.35	10.171	17 40 14.8	40.77	16 11.79	68.19	15 47.02	0.314	
Frid.	13	15 13 5.88	10.207	17 56 24.2	-40.00	16 12.00	68.31	15 39.06	0.350	
Sat.	14	15 17 11.28	10.243	18 12 15.0	39.22	16 12.21	68.43	15 30.24	0.386	
SUN.	15	15 21 17.56	10.280	18 27 46.7	38.41	16 12.42	68.55	15 20.54	0.422	
Mon.	16	15 25 24.70	10.315	18 42 58.9	-37.59	16 12.63	68.66	15 10.00	0.458	
Tues.	17	15 29 32.70	10.351	18 57 51.3	36.76	16 12.83	68.78	14 58.59	0.493	
Wed.	18	15 33 41.54	10.386	19 12 23.6	35.91	16 13.03	68.89	14 46.33	0.529	
Thur.	19	15 37 51.23	10.421	19 26 35.1	-35.04	16 13.23	69.01	14 33.22	0.564	
Frid.	20	15 42 1.77	10.456	19 40 25.6	34.16	16 13.42	69.12	14 19.28	0.599	
Sat.	21	15 46 13.13	10.490	19 53 54.9	33.26	16 13.61	69.23	14 4.51	0.633	
SUN.	22	15 50 25.31	10.525	20 7 2.4	-32.34	16 13.79	69.34	13 48.93	0.666	
Mon.	23	15 54 38.30	10.558	20 19 47.7	31.42	16 13.98	69.45	13 32.55	0.699	
Tues.	24	15 58 52.08	10.590	20 32 10.6	30.48	16 14.16	69.55	13 15.38	0.731	
Wed.	25	16 3 6.62	10.621	20 44 10.5	-29.52	16 14.34	69.66	12 57.44	0.763	
Thur.	26	16 7 21.91	10.651	20 55 47.3	28.54	16 14.52	69.77	12 38.76	0.794	
Frid.	27	16 11 37.93	10.681	21 7 0.6	27.55	16 14.70	69.87	12 19.35	0.824	
Sat.	28	16 15 54.66	10.711	21 17 49.7	-26.54	16 14.88	69.97	11 59.23	0.853	
SUN.	29	16 20 12.08	10.740	21 28 14.8	25.53	16 15.05	70.06	11 38.42	0.881	
Mon.	30	16 24 30.17	10.767	21 38 15.2	24.50	16 15.22	70.15	11 16.95	0.908	
Tues.	31	16 28 48.92	10.794	S. 21 47 50.8	-23.46	16 15.38	70.24	10 54.83	0.934	

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.19 from the sidereal time.
The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.19 from the sidereal time. The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ' "	"	m s	s	h m s
<i>SUN.</i>	1	14 25 10.00	9.791	S. 14 24 2.3	-48.18	16 18.85	0.066	14 41 28.85
Mon.	2	14 29 5.38	9.823	14 43 11.6	47.59	16 20.02	0.033	14 45 25.40
Tues.	3	14 33 1.55	9.856	15 2 6.4	46.97	16 20.41	0.000	14 49 21.96
Wed.	4	14 36 58.51	9.890	15 20 46.4	-46.34	16 20.00	0.034	14 53 18.51
Thur.	5	14 40 56.28	9.924	15 39 11.1	45.70	16 18.79	0.068	14 57 15.07
Frid.	6	14 44 54.86	9.958	15 57 20.2	45.04	16 16.76	0.102	15 1 11.62
Sat.	7	14 48 54.28	9.993	16 15 13.3	-44.37	16 13.90	0.136	15 5 8.18
<i>SUN.</i>	8	14 52 54.53	10.028	16 32 50.0	43.68	16 10.20	0.171	15 9 4.73
Mon.	9	14 56 55.62	10.063	16 50 10.0	42.97	16 5.67	0.206	15 13 1.29
Tues.	10	15 0 57.56	10.099	17 7 12.8	-42.25	16 0.28	0.242	15 16 57.84
Wed.	11	15 5 0.36	10.135	17 23 58.1	41.51	15 54.04	0.278	15 20 54.40
Thur.	12	15 9 4.02	10.171	17 40 25.5	40.76	15 46.94	0.314	15 24 50.96
Frid.	13	15 13 8.54	10.207	17 56 34.6	-39.99	15 38.97	0.350	15 28 47.51
Sat.	14	15 17 13.93	10.243	18 12 25.1	39.21	15 30.14	0.386	15 32 44.07
<i>SUN.</i>	15	15 21 20.19	10.279	18 27 56.5	38.41	15 20.43	0.422	15 36 40.62
Mon.	16	15 25 27.30	10.314	18 43 8.4	-37.59	15 9.88	0.458	15 40 37.18
Tues.	17	15 29 35.27	10.350	18 58 0.5	36.75	14 58.47	0.493	15 44 33.74
Wed.	18	15 33 44.09	10.385	19 12 32.4	35.90	14 46.20	0.529	15 48 30.29
Thur.	19	15 37 53.76	10.420	19 26 43.6	-35.03	14 33.09	0.564	15 52 26.85
Frid.	20	15 42 4.27	10.455	19 40 33.8	34.15	14 19.14	0.599	15 56 23.41
Sat.	21	15 46 15.60	10.489	19 54 2.7	33.25	14 4.36	0.633	16 0 19.96
<i>SUN.</i>	22	15 50 27.74	10.522	20 7 9.8	-32.33	13 48.78	0.666	16 4 16.52
Mon.	23	15 54 40.69	10.556	20 19 54.8	31.40	13 32.39	0.699	16 8 13.08
Tues.	24	15 58 54.42	10.588	20 32 17.3	30.46	13 15.22	0.731	16 12 9.64
Wed.	25	16 3 8.91	10.620	20 44 16.9	-29.50	12 57.28	0.763	16 16 6.19
Thur.	26	16 7 24.16	10.650	20 55 53.3	28.52	12 38.59	0.794	16 20 2.75
Frid.	27	16 11 40.13	10.680	21 7 6.2	27.53	12 19.18	0.824	16 23 59.31
Sat.	28	16 15 56.80	10.709	21 17 55.0	-26.53	11 59.06	0.853	16 27 55.86
<i>SUN.</i>	29	16 20 14.17	10.738	21 28 19.7	25.52	11 38.25	0.881	16 31 52.42
Mon.	30	16 24 32.20	10.765	21 38 19.8	24.49	11 16.78	0.908	16 35 48.98
Tues.	31	16 28 50.88	10.791	S. 21 47 55.1	-23.45	10 54.66	0.934	16 39 45.54

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

Diff. for 1 Hour,
+ 9°.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	306	218 40 55.0	40 31.7	150.19	— 0.55	9.996 5498	— 47.9	h m s 9 16 59.65
2	307	219 41 0.4	40 37.0	150.26	0.64	9.996 4354	47.4	9 13 3.74
3	308	220 41 7.4	40 43.8	150.32	0.71	9.996 3221	46.9	9 9 7.83
4	309	221 41 15.8	40 52.1	150.39	— 0.73	9.996 2101	— 46.3	9 5 11.93
5	310	222 41 25.9	41 2.0	150.45	0.73	9.996 0996	45.7	9 1 16.02
6	311	223 41 37.4	41 13.4	150.52	0.70	9.995 9908	45.0	8 57 20.11
7	312	224 41 50.8	41 26.6	150.59	— 0.65	9.995 8837	— 44.2	8 53 24.20
8	313	225 42 5.8	41 41.5	150.66	0.56	9.995 7784	43.4	8 49 28.29
9	314	226 42 22.5	41 58.1	150.73	0.44	9.995 6751	42.7	8 45 32.38
10	315	227 42 41.0	42 16.4	150.81	— 0.31	9.995 5736	— 41.9	8 41 36.47
11	316	228 43 1.4	42 36.6	150.89	0.18	9.995 4739	41.2	8 37 40.56
12	317	229 43 23.6	42 58.7	150.96	— 0.06	9.995 3760	40.4	8 33 44.65
13	318	230 43 47.7	43 22.6	151.04	+ 0.05	9.995 2799	— 39.7	8 29 48.74
14	319	231 44 13.6	43 48.5	151.12	0.17	9.995 1854	39.0	8 25 52.83
15	320	232 44 41.5	44 16.2	151.20	0.25	9.995 0925	38.4	8 21 56.92
16	321	233 45 11.1	44 45.7	151.28	+ 0.31	9.995 0010	— 37.8	8 18 1.01
17	322	234 45 42.6	45 17.0	151.35	0.35	9.994 9110	37.2	8 14 5.10
18	323	235 46 16.0	45 50.2	151.43	0.37	9.994 8223	36.6	8 10 9.19
19	324	236 46 51.0	46 25.1	151.50	+ 0.36	9.994 7350	— 36.1	8 6 13.28
20	325	237 47 27.7	47 1.6	151.57	0.32	9.994 6488	35.6	8 2 17.36
21	326	238 48 6.1	47 39.9	151.63	0.27	9.994 5639	35.1	7 58 21.45
22	327	239 48 46.1	48 19.7	151.70	+ 0.18	9.994 4800	— 34.7	7 54 25.54
23	328	240 49 27.6	49 1.0	151.76	+ 0.05	9.994 3973	34.3	7 50 29.63
24	329	241 50 10.5	49 43.7	151.82	— 0.07	9.994 3156	33.8	7 46 33.72
25	330	242 50 54.7	50 27.8	151.87	— 0.20	9.994 2350	— 33.3	7 42 37.81
26	331	243 51 40.1	51 13.0	151.92	0.35	9.994 1556	32.8	7 38 41.90
27	332	244 52 26.6	51 59.4	151.96	0.49	9.994 0774	32.3	7 34 45.99
28	333	245 53 14.2	52 46.8	152.00	— 0.61	9.994 0005	— 31.7	7 30 50.08
29	334	246 54 2.8	53 35.2	152.04	0.70	9.993 9251	31.1	7 26 54.16
30	335	247 54 52.2	54 24.4	152.08	0.77	9.993 8513	30.4	7 22 58.25
31	336	248 55 42.5	55 14.6	152.11	— 0.83	9.993 7794	— 29.6	7 19 2.34

NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.

Diff. for 1 Hour,
— 9°.8296.
(Table II.)

GREENWICH MEAN TIME.									
Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	' "	' "	' "	"	' "	"	h m	m	d
1	16 6.1	16 9.2	58 59.9	+ 0.97	59 11.1	+ 0.89	6 16.0	2.38	7.2
2	16 11.9	16 14.4	59 21.3	0.79	59 30.3	0.68	7 12.0	2.29	8.2
3	16 16.5	16 18.0	59 37.8	0.55	59 43.6	0.39	8 5.9	2.20	9.2
4	16 19.0	16 19.4	59 47.2	+ 0.21	59 48.5	+ 0.01	8 57.9	2.14	10.2
5	16 19.0	16 18.0	59 47.3	- 0.21	59 43.4	- 0.44	9 48.7	2.11	11.2
6	16 16.2	16 13.6	59 36.7	0.68	59 27.2	0.91	10 39.2	2.11	12.2
7	16 10.2	16 6.2	59 14.9	- 1.13	59 0.1	- 1.34	11 30.3	2.14	13.2
8	16 1.5	15 56.2	58 42.8	1.52	58 23.6	1.66	12 22.4	2.20	14.2
9	15 50.6	15 44.6	58 2.8	1.78	57 40.9	1.86	13 15.9	2.24	15.2
10	15 38.4	15 32.2	57 18.2	- 1.90	56 55.3	- 1.90	14 9.9	2.26	16.2
11	15 26.0	15 20.0	56 32.6	1.86	56 10.6	1.80	15 4.0	2.24	17.2
12	15 14.3	15 8.9	55 49.6	1.69	55 30.0	1.56	15 57.0	2.17	18.2
13	15 4.1	14 59.7	55 12.2	- 1.41	54 56.3	- 1.23	16 47.8	2.06	19.2
14	14 56.1	14 53.0	54 42.7	1.03	54 31.5	0.83	17 36.1	1.96	20.2
15	14 50.6	14 49.0	54 22.8	0.62	54 16.8	- 0.40	18 21.8	1.85	21.2
16	14 48.0	14 47.8	54 13.3	- 0.18	54 12.5	+ 0.05	19 5.3	1.78	22.2
17	14 48.3	14 49.5	54 14.4	+ 0.26	54 18.8	0.46	19 47.4	1.73	23.2
18	14 51.4	14 53.8	54 25.6	0.66	54 34.6	0.85	20 28.8	1.72	24.2
19	14 56.9	15 0.5	54 45.8	+ 1.01	54 58.9	+ 1.16	21 10.6	1.76	25.2
20	15 4.5	15 8.9	55 13.6	1.28	55 29.7	1.38	21 53.5	1.83	26.2
21	15 13.5	15 18.4	55 46.8	1.46	56 4.7	1.51	22 38.8	1.94	27.2
22	15 23.4	15 28.4	56 23.0	+ 1.53	56 41.4	+ 1.53	23 27.1	2.08	28.2
23	15 33.4	15 38.2	56 59.7	1.50	57 17.4	1.44	0	.	29.2
24	15 42.8	15 47.1	57 34.3	1.37	57 50.2	1.28	0 19.1	2.25	0.6
25	15 51.2	15 54.8	58 4.9	+ 1.17	58 18.3	+ 1.05	1 14.7	2.38	1.6
26	15 58.0	16 0.9	58 30.1	0.93	58 40.5	0.80	2 13.2	2.47	2.6
27	16 3.2	16 5.2	58 49.3	0.67	58 56.6	0.55	3 12.8	2.48	3.6
28	16 6.8	16 8.1	59 2.5	+ 0.43	59 7.0	+ 0.32	4 11.7	2.42	4.6
29	16 9.0	16 9.5	59 10.3	0.22	59 12.3	+ 0.12	5 8.4	2.31	5.6
30	16 9.7	16 9.7	59 13.1	+ 0.03	59 12.9	- 0.07	6 2.3	2.19	6.6
31	16 9.3	16 8.6	59 11.6	- 0.16	59 9.1	- 0.25	6 53.7	2.10	7.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 1.					TUESDAY 3.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	20 43 4.00	2.4681	S. 21 38 40.7	6.797	0	22 37 56.81	2.3132	S. 13 48 49.2	12.341
1	20 45 32.01	2.4655	21 31 48.7	6.937	1	22 40 15.50	2.3099	13 36 26.2	12.426
2	20 47 59.86	2.4628	21 24 48.3	7.076	2	22 42 34.00	2.3067	13 23 58.1	12.509
3	20 50 27.55	2.4602	21 17 39.6	7.214	3	22 44 52.31	2.3036	13 11 25.1	12.591
4	20 52 55.08	2.4575	21 10 22.6	7.352	4	22 47 10.43	2.3004	12 58 47.2	12.672
5	20 55 22.45	2.4547	21 2 57.4	7.488	5	22 49 28.36	2.2973	12 46 4.4	12.752
6	20 57 49.65	2.4519	20 55 24.0	7.624	6	22 51 46.11	2.2943	12 33 16.9	12.831
7	21 0 16.68	2.4490	20 47 42.5	7.759	7	22 54 3.68	2.2912	12 20 24.7	12.907
8	21 2 43.53	2.4461	20 39 52.9	7.893	8	22 56 21.06	2.2882	12 7 28.0	12.982
9	21 5 10.21	2.4432	20 31 55.3	8.026	9	22 58 38.26	2.2852	11 54 26.9	13.056
10	21 7 36.71	2.4401	20 23 49.8	8.158	10	23 0 55.29	2.2823	11 41 21.3	13.129
11	21 10 3.02	2.4370	20 15 36.3	8.290	11	23 3 12.14	2.2793	11 28 11.4	13.200
12	21 12 29.15	2.4339	20 7 15.0	8.420	12	23 5 28.81	2.2764	11 14 57.3	13.269
13	21 14 55.09	2.4308	19 58 45.9	8.549	13	23 7 45.31	2.2737	11 1 39.1	13.337
14	21 17 20.85	2.4277	19 50 9.1	8.677	14	23 10 1.65	2.2709	10 48 16.8	13.404
15	21 19 46.42	2.4245	19 41 24.7	8.803	15	23 12 17.82	2.2682	10 34 50.6	13.469
16	21 22 11.79	2.4212	19 32 32.7	8.930	16	23 14 33.83	2.2654	10 21 20.5	13.533
17	21 24 36.97	2.4181	19 23 33.1	9.055	17	23 16 49.67	2.2627	10 7 46.6	13.596
18	21 27 1.96	2.4148	19 14 26.1	9.178	18	23 19 5.36	2.2602	9 54 9.0	13.657
19	21 29 26.75	2.4115	19 5 11.7	9.302	19	23 21 20.89	2.2576	9 40 27.8	13.716
20	21 31 51.34	2.4081	18 55 49.9	9.424	20	23 23 36.27	2.2551	9 26 43.1	13.773
21	21 34 15.72	2.4047	18 46 20.8	9.544	21	23 25 51.50	2.2526	9 12 55.0	13.830
22	21 36 39.91	2.4015	18 36 44.6	9.663	22	23 28 6.58	2.2502	8 59 3.5	13.885
23	21 39 3.90	2.3981	S. 18 27 1.2	9.782	23	23 30 21.52	2.2477	S. 8 45 8.8	13.938
MONDAY 2.					WEDNESDAY 4.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	21 41 27.68	2.3947	S. 18 17 10.7	9.899	0	23 32 36.31	2.2453	S. 8 31 10.9	13.991
1	21 43 51.26	2.3912	18 7 13.3	10.015	1	23 34 50.96	2.2431	8 17 9.9	14.041
2	21 46 14.63	2.3878	17 57 8.9	10.131	2	23 37 5.48	2.2409	8 3 6.0	14.089
3	21 48 37.80	2.3844	17 46 57.6	10.244	3	23 39 19.87	2.2387	7 48 59.2	14.137
4	21 51 0.76	2.3809	17 36 39.6	10.356	4	23 41 34.13	2.2366	7 34 49.6	14.183
5	21 53 23.51	2.3775	17 26 14.9	10.467	5	23 43 48.26	2.2344	7 20 37.2	14.227
6	21 55 46.06	2.3741	17 15 43.5	10.578	6	23 46 2.26	2.2324	7 6 22.3	14.270
7	21 58 8.40	2.3706	17 5 5.5	10.687	7	23 48 16.15	2.2305	6 52 4.8	14.312
8	22 0 30.53	2.3672	16 54 21.1	10.794	8	23 50 29.92	2.2285	6 37 44.8	14.352
9	22 2 52.46	2.3637	16 43 30.2	10.901	9	23 52 43.57	2.2266	6 23 22.5	14.390
10	22 5 14.18	2.3602	16 32 33.0	11.006	10	23 54 57.11	2.2248	6 8 58.0	14.427
11	22 7 35.69	2.3568	16 21 29.5	11.110	11	23 57 10.55	2.2231	5 54 31.2	14.463
12	22 9 57.00	2.3534	16 10 19.8	11.212	12	23 59 23.88	2.2213	5 40 2.4	14.497
13	22 12 18.10	2.3499	15 59 4.0	11.313	13	0 1 37.11	2.2197	5 25 31.6	14.529
14	22 14 38.99	2.3465	15 47 42.2	11.413	14	0 3 50.24	2.2181	5 10 58.9	14.560
15	22 16 59.68	2.3432	15 36 14.4	11.512	15	0 6 3.28	2.2165	4 56 24.4	14.590
16	22 19 20.17	2.3397	15 24 40.7	11.609	16	0 8 16.22	2.2150	4 41 48.1	14.617
17	22 21 40.45	2.3362	15 13 1.3	11.705	17	0 10 29.08	2.2136	4 27 10.3	14.643
18	22 24 0.52	2.3329	15 1 16.1	11.800	18	0 12 41.85	2.2122	4 12 30.9	14.668
19	22 26 20.40	2.3297	14 49 25.3	11.893	19	0 14 54.55	2.2109	3 57 50.1	14.692
20	22 28 40.08	2.3263	14 37 28.9	11.986	20	0 17 7.16	2.2096	3 43 7.9	14.713
21	22 30 59.56	2.3230	14 25 27.0	12.077	21	0 19 19.70	2.2084	3 28 24.5	14.733
22	22 33 18.84	2.3197	14 13 19.7	12.166	22	0 21 32.17	2.2072	3 13 39.9	14.752
23	22 35 37.92	2.3164	14 1 7.1	12.254	23	0 23 44.57	2.2062	2 58 54.2	14.769
24	22 37 56.81	2.3132	S. 13 48 49.2	12.341	24	0 25 56.91	2.2051	S. 2 44 7.6	14.784

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 5.					SATURDAY 7.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	0 25 56.91	2.2051	S. 2 44 7.6	14.784	0	2 11 39.00	2.2189	N. 8 54 19.3	13.738
1	0 28 9.18	2.2041	2 29 20.1	14.798	1	2 13 52.18	2.2203	9 8 1.9	13.680
2	0 30 21.40	2.2038	2 14 31.8	14.811	2	2 16 5.44	2.2217	9 21 40.9	13.621
3	0 32 33.56	2.2023	1 59 42.8	14.822	3	2 18 18.79	2.2233	9 35 16.4	13.561
4	0 34 45.68	2.2016	1 44 53.2	14.831	4	2 20 32.24	2.2249	9 48 48.2	13.498
5	0 36 57.75	2.2007	1 30 3.1	14.838	5	2 22 45.78	2.2264	10 2 16.2	13.434
6	0 39 9.77	2.2000	1 15 12.6	14.845	6	2 24 59.41	2.2280	10 15 40.3	13.368
7	0 41 21.75	2.1993	1 0 21.7	14.850	7	2 27 13.14	2.2297	10 29 0.4	13.308
8	0 43 33.69	2.1987	0 45 30.6	14.852	8	2 29 26.97	2.2313	10 42 16.6	13.235
9	0 45 45.60	2.1982	0 30 39.4	14.854	9	2 31 40.90	2.2330	10 55 28.6	13.166
10	0 47 57.48	2.1978	0 15 48.1	14.855	10	2 33 54.93	2.2347	11 8 36.5	13.096
11	0 50 9.34	2.1974	S. 0 0 56.8	14.853	11	2 36 9.07	2.2365	11 21 40.1	13.023
12	0 52 21.17	2.1970	N. 0 13 54.3	14.850	12	2 38 23.31	2.2382	11 34 39.3	12.950
13	0 54 32.98	2.1967	0 28 45.2	14.846	13	2 40 37.66	2.2400	11 47 34.1	12.876
14	0 56 44.78	2.1965	0 43 35.8	14.840	14	2 42 52.11	2.2418	12 0 24.4	12.800
15	0 58 56.56	2.1963	0 58 26.0	14.832	15	2 45 6.68	2.2437	12 13 10.1	12.728
16	1 1 8.34	2.1962	1 13 15.7	14.823	16	2 47 21.35	2.2455	12 25 51.1	12.644
17	1 3 20.11	2.1961	1 28 4.8	14.818	17	2 49 36.14	2.2474	12 38 27.4	12.565
18	1 5 31.87	2.1961	1 42 53.2	14.800	18	2 51 51.04	2.2493	12 50 58.9	12.483
19	1 7 43.64	2.1962	1 57 40.8	14.787	19	2 54 6.06	2.2512	13 3 25.4	12.401
20	1 9 55.41	2.1962	2 12 27.6	14.778	20	2 56 21.19	2.2532	13 15 47.0	12.318
21	1 12 7.19	2.1964	2 27 13.4	14.755	21	2 58 36.44	2.2551	13 28 3.6	12.233
22	1 14 18.98	2.1966	2 41 58.2	14.737	22	3 0 51.80	2.2570	13 40 15.0	12.147
23	1 16 30.78	2.1968	N. 2 56 41.9	14.717	23	3 3 7.28	2.2590	N. 13 52 21.2	12.060
FRIDAY 6.					SUNDAY 8.				
0	1 18 42.60	2.1972	N. 3 11 24.3	14.696	0	3 5 22.88	2.2610	N. 14 4 22.3	11.972
1	1 20 54.44	2.1975	3 26 5.4	14.673	1	3 7 38.60	2.2630	14 16 17.9	11.882
2	1 23 6.30	2.1979	3 40 45.1	14.648	2	3 9 54.44	2.2649	14 28 8.1	11.791
3	1 25 18.19	2.1983	3 55 23.2	14.622	3	3 12 10.39	2.2669	14 39 52.8	11.699
4	1 27 30.10	2.1988	4 9 59.8	14.596	4	3 14 26.47	2.2689	14 51 32.0	11.607
5	1 29 42.05	2.1995	4 24 34.7	14.567	5	3 16 42.66	2.2709	15 3 5.6	11.512
6	1 31 54.04	2.2001	4 39 7.8	14.537	6	3 18 58.98	2.2730	15 14 33.4	11.416
7	1 34 6.06	2.2007	4 53 39.1	14.505	7	3 21 15.42	2.2749	15 25 55.5	11.320
8	1 36 18.12	2.2014	5 8 8.4	14.472	8	3 23 31.97	2.2769	15 37 11.8	11.222
9	1 38 30.23	2.2022	5 22 35.7	14.437	9	3 25 48.65	2.2790	15 48 22.2	11.124
10	1 40 42.39	2.2030	5 37 0.9	14.401	10	3 28 5.45	2.2810	15 59 26.7	11.024
11	1 42 54.59	2.2038	5 51 23.8	14.362	11	3 30 22.37	2.2829	16 10 25.1	10.922
12	1 45 6.85	2.2047	6 5 44.4	14.323	12	3 32 39.40	2.2848	16 21 17.4	10.820
13	1 47 19.16	2.2057	6 20 2.6	14.282	13	3 34 56.55	2.2869	16 32 3.5	10.717
14	1 49 31.53	2.2067	6 34 18.3	14.240	14	3 37 13.83	2.2889	16 42 43.5	10.613
15	1 51 43.96	2.2077	6 48 31.4	14.197	15	3 39 31.22	2.2908	16 53 17.1	10.508
16	1 53 56.45	2.2087	7 2 41.9	14.152	16	3 41 48.73	2.2927	17 3 44.4	10.402
17	1 56 9.01	2.2099	7 16 49.6	14.105	17	3 44 6.35	2.2947	17 14 5.3	10.294
18	1 58 21.64	2.2111	7 30 54.5	14.057	18	3 46 24.09	2.2967	17 24 19.7	10.186
19	2 0 34.34	2.2123	7 44 56.5	14.007	19	3 48 41.95	2.2986	17 34 27.6	10.077
20	2 2 47.12	2.2136	7 58 55.4	13.957	20	3 50 59.92	2.3004	17 44 29.0	9.967
21	2 4 59.97	2.2148	8 12 51.3	13.904	21	3 53 18.00	2.3022	17 54 23.7	9.856
22	2 7 12.90	2.2162	8 26 43.9	13.850	22	3 55 36.19	2.3041	18 4 11.7	9.743
23	2 9 25.91	2.2175	8 40 33.3	13.795	23	3 57 54.49	2.3059	18 13 52.9	9.631
24	2 11 39.00	2.2189	N. 8 54 19.3	13.738	24	4 0 12.90	2.3077	N. 18 23 27.4	9.517

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.			Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	
MONDAY 9.							WEDNESDAY 11.							
0	h	m	s	s	°	"	0	h	m	s	s	°	"	
0	4	0	12.90	2.3077	N.18	23 27.4	9.517	5	52	17.08	2.3409	N.23	36 28.8	3.355
1	4	2	31.42	2.3095	18	32 55.0	9.402	1	5	54 37.51	2.3401	23	39 46.0	3.219
2	4	4	50.04	2.3112	18	42 15.7	9.287	2	5	56 57.89	2.3392	23	42 55.1	3.084
3	4	7	8.77	2.3130	18	51 29.5	9.171	3	5	59 18.22	2.3382	23	45 56.1	2.949
4	4	9	27.60	2.3147	19	0 36.2	9.053	4	6	1 38.48	2.3372	23	48 49.0	2.814
5	4	11	46.53	2.3162	19	9 35.9	8.936	5	6	3 58.68	2.3362	23	51 33.8	2.679
6	4	14	5.55	2.3179	19	18 28.5	8.817	6	6	6 18.82	2.3350	23	54 10.5	2.544
7	4	16	24.68	2.3196	19	27 14.0	8.697	7	6	8 38.88	2.3337	23	56 39.1	2.409
8	4	18	43.90	2.3210	19	35 52.2	8.577	8	6	10 58.87	2.3324	23	58 59.6	2.274
9	4	21	3.20	2.3225	19	44 23.2	8.457	9	6	13 18.77	2.3310	24	1 12.0	2.139
10	4	23	22.60	2.3241	19	52 47.0	8.335	10	6	15 38.59	2.3296	24	3 16.3	2.005
11	4	25	42.09	2.3255	20	1 3.4	8.212	11	6	17 58.32	2.3281	24	5 12.6	1.871
12	4	28	1.66	2.3269	20	9 12.4	8.088	12	6	20 17.96	2.3265	24	7 0.8	1.737
13	4	30	21.32	2.3282	20	17 14.0	7.965	13	6	22 37.50	2.3248	24	8 41.0	1.603
14	4	32	41.05	2.3296	20	25 8.2	7.841	14	6	24 56.94	2.3231	24	10 13.2	1.469
15	4	35	0.87	2.3309	20	32 54.9	7.716	15	6	27 16.27	2.3212	24	11 37.3	1.336
16	4	37	20.76	2.3321	20	40 34.1	7.590	16	6	29 35.49	2.3193	24	12 53.5	1.203
17	4	39	40.72	2.3332	20	48 5.7	7.463	17	6	31 54.59	2.3174	24	14 1.7	1.071
18	4	42	0.75	2.3343	20	55 29.7	7.336	18	6	34 13.58	2.3155	24	15 2.0	0.938
19	4	44	20.84	2.3354	21	2 46.0	7.208	19	6	36 32.45	2.3134	24	15 54.3	0.806
20	4	46	41.00	2.3365	21	9 54.7	7.081	20	6	38 51.19	2.3112	24	16 38.7	0.674
21	4	49	1.22	2.3375	21	16 55.7	6.952	21	6	41 9.80	2.3090	24	17 15.2	0.543
22	4	51	21.50	2.3384	21	23 49.0	6.824	22	6	43 28.27	2.3067	24	17 43.9	0.412
23	4	53	41.83	2.3392	N.21	30 34.6	6.694	23	6	45 46.61	2.3044	N.24	18 4.6	0.281
TUESDAY 10.							THURSDAY 12.							
0	4	56	2.21	2.3401	N.21	37 12.3	6.563	0	6	48 4.80	2.3020	N.24	18 17.6	0.151
1	4	58	22.64	2.3408	21	43 42.2	6.433	1	6	50 22.85	2.2996	24	18 22.7	+0.021
2	5	0	43.11	2.3415	21	50 4.3	6.302	2	6	52 40.75	2.2970	24	18 20.1	-0.108
3	5	3	3.62	2.3422	21	56 18.5	6.172	3	6	54 58.49	2.2944	24	18 9.7	0.237
4	5	5	24.17	2.3427	22	2 24.9	6.040	4	6	57 16.08	2.2917	24	17 51.6	0.367
5	5	7	44.75	2.3432	22	8 23.3	5.907	5	6	59 33.50	2.2890	24	17 25.7	0.495
6	5	10	5.36	2.3437	22	14 13.8	5.773	6	7	1 50.76	2.2863	24	16 52.2	0.622
7	5	12	26.00	2.3442	22	19 56.3	5.642	7	7	4 7.86	2.2836	24	16 11.1	0.749
8	5	14	46.66	2.3445	22	25 30.9	5.510	8	7	6 24.79	2.2807	24	15 22.3	0.876
9	5	17	7.34	2.3448	22	30 57.5	5.377	9	7	8 41.54	2.2777	24	14 26.0	1.002
10	5	19	28.04	2.3451	22	36 16.1	5.243	10	7	10 58.11	2.2747	24	13 22.1	1.127
11	5	21	48.75	2.3452	22	41 26.7	5.109	11	7	13 14.50	2.2716	24	12 10.7	1.252
12	5	24	9.46	2.3452	22	46 29.2	4.974	12	7	15 30.70	2.2685	24	10 51.8	1.377
13	5	26	30.18	2.3452	22	51 23.6	4.840	13	7	17 46.72	2.2654	24	9 25.4	1.502
14	5	28	50.89	2.3452	22	56 10.0	4.707	14	7	20 2.55	2.2622	24	7 51.6	1.625
15	5	31	11.60	2.3451	23	0 48.4	4.572	15	7	22 18.18	2.2589	24	6 10.4	1.747
16	5	33	32.30	2.3449	23	5 18.6	4.437	16	7	24 33.62	2.2557	24	4 21.9	1.870
17	5	35	52.99	2.3447	23	9 40.8	4.302	17	7	26 48.86	2.2523	24	2 26.0	1.992
18	5	38	13.66	2.3443	23	13 54.8	4.167	18	7	29 3.90	2.2489	24	0 22.9	2.112
19	5	40	34.31	2.3439	23	18 0.8	4.032	19	7	31 18.73	2.2454	23	58 12.5	2.233
20	5	42	54.93	2.3434	23	21 58.6	3.896	20	7	33 33.35	2.2419	23	55 54.9	2.353
21	5	45	15.52	2.3429	23	25 48.3	3.761	21	7	35 47.76	2.2384	23	53 30.1	2.472
22	5	47	36.08	2.3423	23	29 29.9	3.626	22	7	38 1.96	2.2348	23	50 58.2	2.591
23	5	49	56.60	2.3417	23	33 3.4	3.491	23	7	40 15.94	2.2312	23	48 19.2	2.709
24	5	52	17.08	2.3409	N.23	36 28.8	3.355	24	7	42 29.71	2.2277	N.23	45 33.1	2.827

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 13.					SUNDAY 15.				
0	7 42 29.71	2.2277	N. 23 45 33.1	2.827	0	9 24 47.81	2.0325	N. 19 28 9.0	7.615
1	7 44 43.26	2.2239	23 42 40.0	2.943	1	9 26 49.64	2.0285	19 20 29.6	7.697
2	7 46 56.58	2.2202	23 39 39.9	3.059	2	9 28 51.23	2.0246	19 12 45.4	7.777
3	7 49 9.68	2.2165	23 36 32.9	3.174	3	9 30 52.59	2.0207	19 4 56.3	7.857
4	7 51 22.56	2.2127	23 33 19.0	3.289	4	9 32 53.72	2.0168	18 57 2.5	7.937
5	7 53 35.20	2.2088	23 29 58.2	3.403	5	9 34 54.61	2.0129	18 49 3.9	8.016
6	7 55 47.62	2.2050	23 26 30.6	3.516	6	9 36 55.27	2.0090	18 41 0.6	8.093
7	7 57 59.80	2.2011	23 22 56.3	3.628	7	9 38 55.69	2.0052	18 32 52.7	8.171
8	8 0 11.75	2.1972	23 19 15.2	3.741	8	9 40 55.89	2.0014	18 24 40.1	8.247
9	8 2 23.46	2.1932	23 15 27.4	3.852	9	9 42 55.86	1.9977	18 16 23.0	8.322
10	8 4 34.93	2.1892	23 11 32.9	3.963	10	9 44 55.61	1.9939	18 8 1.4	8.397
11	8 6 46.17	2.1853	23 7 31.8	4.072	11	9 46 55.13	1.9902	17 59 35.3	8.472
12	8 8 57.17	2.1813	23 3 24.2	4.182	12	9 48 54.43	1.9865	17 51 4.7	8.547
13	8 11 7.93	2.1772	22 59 10.0	4.290	13	9 50 53.51	1.9828	17 42 29.7	8.619
14	8 13 18.44	2.1732	22 54 49.4	4.397	14	9 52 52.37	1.9792	17 33 50.4	8.691
15	8 15 28.71	2.1691	22 50 22.3	4.505	15	9 54 51.02	1.9757	17 25 6.8	8.762
16	8 17 38.73	2.1650	22 45 48.8	4.611	16	9 56 49.45	1.9721	17 16 18.9	8.834
17	8 19 48.51	2.1610	22 41 9.0	4.716	17	9 58 47.67	1.9686	17 7 26.7	8.904
18	8 21 58.05	2.1568	22 36 22.9	4.821	18	10 0 45.68	1.9651	16 58 30.4	8.973
19	8 24 7.33	2.1527	22 31 30.5	4.925	19	10 2 43.48	1.9617	16 49 29.9	9.042
20	8 26 16.37	2.1486	22 26 31.9	5.028	20	10 4 41.08	1.9583	16 40 25.4	9.110
21	8 28 25.16	2.1444	22 21 27.1	5.131	21	10 6 38.48	1.9549	16 31 16.7	9.177
22	8 30 33.70	2.1402	22 16 16.2	5.232	22	10 8 35.67	1.9516	16 22 4.1	9.243
23	8 32 41.99	2.1361	N. 22 10 59.2	5.333	23	10 10 32.67	1.9483	N. 16 12 47.5	9.310
SATURDAY 14.					MONDAY 16.				
0	8 34 50.03	2.1319	N. 22 5 36.2	5.433	0	10 12 29.47	1.9451	N. 16 3 26.9	9.376
1	8 36 57.82	2.1277	22 0 7.2	5.533	1	10 14 26.08	1.9418	15 54 2.4	9.440
2	8 39 5.35	2.1235	21 54 32.2	5.632	2	10 16 22.49	1.9387	15 44 34.1	9.503
3	8 41 12.64	2.1193	21 48 51.3	5.730	3	10 18 18.72	1.9356	15 35 2.0	9.567
4	8 43 19.67	2.1151	21 43 4.6	5.827	4	10 20 14.76	1.9324	15 25 26.1	9.630
5	8 45 26.45	2.1109	21 37 12.0	5.924	5	10 22 10.61	1.9294	15 15 46.4	9.692
6	8 47 32.98	2.1067	21 31 13.7	6.019	6	10 24 6.29	1.9265	15 6 3.0	9.753
7	8 49 39.25	2.1025	21 25 9.7	6.115	7	10 26 1.79	1.9235	14 56 16.0	9.814
8	8 51 45.28	2.0983	21 18 59.9	6.209	8	10 27 57.11	1.9205	14 46 25.3	9.874
9	8 53 51.05	2.0941	21 12 44.6	6.302	9	10 29 52.25	1.9177	14 36 31.1	9.933
10	8 55 56.57	2.0900	21 6 23.7	6.395	10	10 31 47.23	1.9149	14 26 33.3	9.992
11	8 58 1.85	2.0858	20 59 57.2	6.487	11	10 33 42.04	1.9121	14 16 32.0	10.050
12	9 0 6.87	2.0816	20 53 25.2	6.578	12	10 35 36.68	1.9093	14 6 27.3	10.107
13	9 2 11.64	2.0774	20 46 47.8	6.669	13	10 37 31.16	1.9067	13 56 19.1	10.164
14	9 4 16.16	2.0732	20 40 4.9	6.759	14	10 39 25.48	1.9041	13 46 7.6	10.220
15	9 6 20.43	2.0691	20 33 16.7	6.847	15	10 41 19.65	1.9015	13 35 52.7	10.276
16	9 8 24.45	2.0650	20 26 23.2	6.936	16	10 43 13.66	1.8989	13 25 34.5	10.331
17	9 10 28.23	2.0609	20 19 24.4	7.023	17	10 45 7.52	1.8964	13 15 13.0	10.385
18	9 12 31.76	2.0567	20 12 20.4	7.110	18	10 47 1.23	1.8940	13 4 48.3	10.438
19	9 14 35.04	2.0527	20 5 11.2	7.197	19	10 48 54.80	1.8917	12 54 20.4	10.492
20	9 16 38.08	2.0487	19 57 56.8	7.282	20	10 50 48.23	1.8892	12 43 49.3	10.543
21	9 18 40.88	2.0446	19 50 37.4	7.366	21	10 52 41.51	1.8869	12 33 15.2	10.595
22	9 20 43.43	2.0405	19 43 12.9	7.450	22	10 54 34.66	1.8847	12 22 37.9	10.647
23	9 22 45.74	2.0365	19 35 43.4	7.532	23	10 56 27.68	1.8826	12 11 57.6	10.697
24	9 24 47.81	2.0325	N. 19 28 9.0	7.615	24	10 58 20.57	1.8804	N. 12 1 14.3	10.747

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 17.					THURSDAY 19.				
0	10 58 20.57	1.8804	N. 12 1 14.3	10.747	0	12 27 11.52	1.8440	N. 2 39 50.1	12.405
1	11 0 13.33	1.8783	11 50 28.0	10.796	1	12 29 2.18	1.8447	2 27 25.2	12.423
2	11 2 5.97	1.8763	11 39 38.8	10.843	2	12 30 52.89	1.8456	2 14 59.3	12.442
3	11 3 58.49	1.8743	11 28 46.8	10.892	3	12 32 43.65	1.8464	2 2 32.2	12.460
4	11 5 50.89	1.8723	11 17 51.8	10.939	4	12 34 34.46	1.8472	1 50 4.1	12.476
5	11 7 43.17	1.8704	11 6 54.1	10.986	5	12 36 25.32	1.8481	1 37 35.1	12.492
6	11 9 35.34	1.8687	10 55 53.5	11.032	6	12 38 16.24	1.8492	1 25 5.1	12.507
7	11 11 27.41	1.8670	10 44 50.2	11.077	7	12 40 7.23	1.8503	1 12 34.2	12.522
8	11 13 19.38	1.8652	10 33 44.2	11.122	8	12 41 58.28	1.8515	1 0 2.4	12.537
9	11 15 11.24	1.8635	10 22 35.6	11.166	9	12 43 49.41	1.8527	0 47 29.8	12.550
10	11 17 3.00	1.8619	10 11 24.3	11.210	10	12 45 40.61	1.8539	0 34 56.4	12.562
11	11 18 54.67	1.8604	10 0 10.4	11.253	11	12 47 31.88	1.8552	0 22 22.3	12.574
12	11 20 46.25	1.8589	9 48 53.9	11.296	12	12 49 23.24	1.8567	N. 0 9 47.5	12.585
13	11 22 37.74	1.8575	9 37 34.9	11.337	13	12 51 14.68	1.8582	S. 0 2 47.9	12.596
14	11 24 29.15	1.8561	9 26 13.5	11.377	14	12 53 6.22	1.8597	0 15 24.0	12.606
15	11 26 20.47	1.8548	9 14 49.6	11.419	15	12 54 57.84	1.8612	0 28 0.6	12.614
16	11 28 11.72	1.8536	9 3 23.2	11.459	16	12 56 49.56	1.8629	0 40 37.7	12.622
17	11 30 2.90	1.8523	8 51 54.5	11.497	17	12 58 41.39	1.8647	0 53 15.3	12.630
18	11 31 54.00	1.8512	8 40 23.5	11.537	18	13 0 33.32	1.8663	1 5 53.3	12.637
19	11 33 45.04	1.8501	8 28 50.1	11.575	19	13 2 25.35	1.8682	1 18 31.7	12.642
20	11 35 36.01	1.8490	8 17 14.5	11.612	20	13 4 17.50	1.8702	1 31 10.4	12.647
21	11 37 26.92	1.8480	8 5 36.7	11.648	21	13 6 9.77	1.8721	1 43 49.4	12.652
22	11 39 17.77	1.8471	7 53 56.7	11.685	22	13 8 2.15	1.8741	1 56 28.7	12.656
23	11 41 8.57	1.8462	N. 7 42 14.5	11.721	23	13 9 54.66	1.8762	S. 2 9 8.1	12.658
WEDNESDAY 18.					FRIDAY 20.				
0	11 42 59.32	1.8454	N. 7 30 30.2	11.756	0	13 11 47.30	1.8784	S. 2 21 47.7	12.661
1	11 44 50.02	1.8447	7 18 43.8	11.790	1	13 13 40.07	1.8806	2 34 27.4	12.662
2	11 46 40.68	1.8440	7 6 55.4	11.823	2	13 15 32.97	1.8828	2 47 7.1	12.662
3	11 48 31.30	1.8433	6 55 5.0	11.857	3	13 17 26.01	1.8852	2 59 46.8	12.662
4	11 50 21.88	1.8427	6 43 12.6	11.889	4	13 19 19.20	1.8877	3 12 26.5	12.661
5	11 52 12.43	1.8422	6 31 18.3	11.921	5	13 21 12.54	1.8902	3 25 6.1	12.658
6	11 54 2.95	1.8418	6 19 22.1	11.952	6	13 23 6.02	1.8926	3 37 45.5	12.655
7	11 55 53.45	1.8414	6 7 24.0	11.982	7	13 24 59.65	1.8952	3 50 24.7	12.652
8	11 57 43.92	1.8411	5 55 24.2	12.012	8	13 26 53.45	1.8980	4 3 3.7	12.647
9	11 59 34.38	1.8408	5 43 22.5	12.042	9	13 28 47.41	1.9007	4 15 42.4	12.642
10	12 1 24.82	1.8406	5 31 19.1	12.071	10	13 30 41.53	1.9034	4 28 20.7	12.636
11	12 3 15.25	1.8404	5 19 14.0	12.099	11	13 32 35.82	1.9062	4 40 58.7	12.628
12	12 5 5.67	1.8403	5 7 7.2	12.127	12	13 34 30.28	1.9092	4 53 36.1	12.619
13	12 6 56.09	1.8403	4 54 58.8	12.153	13	13 36 24.92	1.9122	5 6 13.0	12.611
14	12 8 46.51	1.8403	4 42 48.8	12.180	14	13 38 19.74	1.9152	5 18 49.4	12.601
15	12 10 36.93	1.8404	4 30 37.2	12.205	15	13 40 14.75	1.9183	5 31 25.1	12.590
16	12 12 27.36	1.8406	4 18 24.2	12.229	16	13 42 9.94	1.9215	5 44 0.2	12.579
17	12 14 17.80	1.8408	4 6 9.7	12.254	17	13 44 5.33	1.9247	5 56 34.6	12.567
18	12 16 8.26	1.8411	3 53 53.7	12.278	18	13 46 0.91	1.9280	6 9 8.2	12.552
19	12 17 58.73	1.8414	3 41 36.3	12.301	19	13 47 56.69	1.9313	6 21 40.9	12.537
20	12 19 49.23	1.8419	3 29 17.6	12.322	20	13 49 52.67	1.9347	6 34 12.7	12.522
21	12 21 39.76	1.8423	3 16 57.6	12.344	21	13 51 48.86	1.9382	6 46 43.6	12.506
22	12 23 30.31	1.8428	3 4 36.3	12.365	22	13 53 45.25	1.9417	6 59 13.4	12.488
23	12 25 20.90	1.8434	2 52 13.8	12.385	23	13 55 41.86	1.9453	7 11 42.2	12.471
24	12 27 11.52	1.8440	N. 2 39 50.1	12.405	24	13 57 38.69	1.9490	S. 7 24 9.9	12.452

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 21.					MONDAY 23.				
0	13 57 38.69	1.9490	S. 7 24 9.9	12.432	0	15 36 25.74	2.1846	S. 16 39 2.6	10.213
1	13 59 35.74	1.9527	7 36 36.4	12.431	1	15 38 36.99	2.1905	16 49 13.1	10.137
2	14 1 33.01	1.9564	7 49 1.6	12.409	2	15 40 48.60	2.1964	16 59 19.0	10.058
3	14 3 30.51	1.9602	8 1 25.5	12.387	3	15 43 0.56	2.2022	17 9 20.1	9.978
4	14 5 28.24	1.9642	8 13 48.1	12.365	4	15 45 12.87	2.2081	17 19 16.4	9.897
5	14 7 26.21	1.9681	8 26 9.3	12.340	5	15 47 25.53	2.2140	17 29 7.8	9.815
6	14 9 24.41	1.9721	8 38 28.9	12.314	6	15 49 38.55	2.2199	17 38 54.2	9.731
7	14 11 22.86	1.9762	8 50 47.0	12.288	7	15 51 51.92	2.2258	17 48 35.5	9.645
8	14 13 21.55	1.9802	9 3 3.5	12.261	8	15 54 5.65	2.2317	17 58 11.6	9.559
9	14 15 20.49	1.9844	9 15 18.3	12.232	9	15 56 19.73	2.2377	18 7 42.6	9.472
10	14 17 19.68	1.9887	9 27 31.4	12.203	10	15 58 34.17	2.2437	18 17 8.2	9.382
11	14 19 19.13	1.9930	9 39 42.7	12.172	11	16 0 48.97	2.2497	18 26 28.4	9.292
12	14 21 18.84	1.9973	9 51 52.1	12.141	12	16 3 4.13	2.2556	18 35 43.2	9.200
13	14 23 18.81	2.0017	10 3 59.6	12.107	13	16 5 19.64	2.2615	18 44 52.4	9.106
14	14 25 19.04	2.0062	10 16 5.0	12.073	14	16 7 35.51	2.2675	18 53 55.9	9.011
15	14 27 19.55	2.0107	10 28 8.4	12.039	15	16 9 51.74	2.2734	19 2 53.7	8.915
16	14 29 20.33	2.0152	10 40 9.7	12.003	16	16 12 8.32	2.2793	19 11 45.7	8.817
17	14 31 21.38	2.0198	10 52 8.8	11.966	17	16 14 25.26	2.2852	19 20 31.8	8.718
18	14 33 22.71	2.0245	11 4 5.6	11.927	18	16 16 42.55	2.2912	19 29 11.9	8.618
19	14 35 24.32	2.0292	11 16 0.1	11.888	19	16 19 0.20	2.2971	19 37 46.0	8.517
20	14 37 26.22	2.0340	11 27 52.2	11.847	20	16 21 18.20	2.3030	19 46 13.9	8.413
21	14 39 28.40	2.0388	11 39 41.8	11.806	21	16 23 36.56	2.3089	19 54 35.6	8.309
22	14 41 30.87	2.0437	11 51 28.9	11.763	22	16 25 55.27	2.3147	20 2 51.0	8.204
23	14 43 33.64	2.0486	S. 12 3 13.4	11.719	23	16 28 14.33	2.3206	S. 20 11 0.1	8.097
SUNDAY 22.					TUESDAY 24.				
0	14 45 36.70	2.0535	S. 12 14 55.2	11.673	0	16 30 33.74	2.3264	S. 20 19 2.7	7.989
1	14 47 40.06	2.0585	12 26 34.2	11.627	1	16 32 53.50	2.3322	20 26 58.8	7.879
2	14 49 43.72	2.0636	12 38 10.4	11.580	2	16 35 13.60	2.3379	20 34 48.2	7.767
3	14 51 47.69	2.0687	12 49 43.8	11.532	3	16 37 34.05	2.3437	20 42 30.9	7.656
4	14 53 51.97	2.0739	13 1 14.2	11.481	4	16 39 54.84	2.3493	20 50 6.9	7.542
5	14 55 56.56	2.0791	13 12 41.5	11.429	5	16 42 15.97	2.3550	20 57 36.0	7.427
6	14 58 1.46	2.0842	13 24 5.7	11.377	6	16 44 37.44	2.3607	21 4 58.2	7.312
7	15 0 6.67	2.0895	13 35 26.7	11.322	7	16 46 59.25	2.3662	21 12 13.4	7.194
8	15 2 12.20	2.0949	13 46 44.4	11.267	8	16 49 21.39	2.3717	21 19 21.5	7.075
9	15 4 18.06	2.1002	13 57 58.8	11.212	9	16 51 43.86	2.3772	21 26 22.4	6.955
10	15 6 24.23	2.1056	14 9 9.8	11.154	10	16 54 6.66	2.3827	21 33 16.1	6.834
11	15 8 30.73	2.1111	14 20 17.3	11.096	11	16 56 29.79	2.3882	21 40 2.5	6.712
12	15 10 37.56	2.1166	14 31 21.3	11.036	12	16 58 53.24	2.3935	21 46 41.5	6.587
13	15 12 44.72	2.1221	14 42 21.6	10.974	13	17 1 17.01	2.3988	21 53 13.0	6.462
14	15 14 52.21	2.1276	14 53 18.2	10.912	14	17 3 41.10	2.4041	21 59 37.0	6.337
15	15 17 0.03	2.1332	15 4 11.0	10.847	15	17 6 5.50	2.4092	22 5 53.4	6.209
16	15 19 8.19	2.1387	15 14 59.9	10.782	16	17 8 30.21	2.4144	22 12 2.1	6.080
17	15 21 16.68	2.1444	15 25 44.9	10.717	17	17 10 55.23	2.4195	22 18 3.0	5.950
18	15 23 25.52	2.1501	15 36 25.9	10.648	18	17 13 20.55	2.4245	22 23 56.1	5.819
19	15 25 34.69	2.1557	15 47 2.7	10.579	19	17 15 46.17	2.4295	22 29 41.3	5.687
20	15 27 44.21	2.1615	15 57 35.4	10.509	20	17 18 12.09	2.4343	22 35 18.6	5.554
21	15 29 54.07	2.1672	16 8 3.8	10.437	21	17 20 38.29	2.4391	22 40 47.8	5.420
22	15 32 4.28	2.1731	16 18 27.8	10.364	22	17 23 4.78	2.4439	22 46 9.0	5.285
23	15 34 14.84	2.1788	16 28 47.5	10.290	23	17 25 31.56	2.4486	22 51 22.0	5.148
24	15 36 25.74	2.1846	S. 16 39 2.6	10.213	24	17 27 58.61	2.4531	S. 22 56 26.8	5.011

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 25.					FRIDAY 27.				
0	17 27 58.61	2.4531	S. 22 56 26.8	5.011	0	19 29 7.09	2.5506	S. 24 3 44.5	2.379
1	17 30 25.93	2.4576	23 1 23.3	4.872	1	19 31 40.10	2.5497	24 1 17.0	2.537
2	17 32 53.52	2.4621	23 6 11.4	4.732	2	19 34 13.05	2.5488	23 58 40.0	2.696
3	17 35 21.38	2.4664	23 10 51.1	4.592	3	19 36 45.95	2.5477	23 55 53.5	2.854
4	17 37 49.49	2.4707	23 15 22.4	4.451	4	19 39 18.77	2.5463	23 52 57.5	3.012
5	17 40 17.86	2.4748	23 19 45.2	4.307	5	19 41 51.51	2.5450	23 49 52.0	3.170
6	17 42 46.47	2.4789	23 23 59.3	4.163	6	19 44 24.17	2.5437	23 46 37.1	3.327
7	17 45 15.33	2.4829	23 28 4.8	4.019	7	19 46 56.75	2.5422	23 43 12.7	3.484
8	17 47 44.42	2.4868	23 32 1.6	3.874	8	19 49 29.23	2.5404	23 39 39.0	3.640
9	17 50 13.74	2.4906	23 35 49.7	3.728	9	19 52 1.60	2.5387	23 35 55.9	3.796
10	17 52 43.29	2.4942	23 39 29.0	3.581	10	19 54 33.87	2.5369	23 32 3.5	3.952
11	17 55 13.05	2.4978	23 42 59.4	3.432	11	19 57 6.03	2.5349	23 28 1.7	4.107
12	17 57 43.03	2.5013	23 46 20.9	3.284	12	19 59 38.06	2.5327	23 23 50.7	4.261
13	18 0 13.21	2.5047	23 49 33.5	3.135	13	20 2 9.96	2.5306	23 19 30.4	4.414
14	18 2 43.60	2.5081	23 52 37.1	2.984	14	20 4 41.73	2.5283	23 15 1.0	4.567
15	18 5 14.18	2.5112	23 55 31.6	2.833	15	20 7 13.36	2.5260	23 10 22.4	4.720
16	18 7 44.95	2.5143	23 58 17.1	2.682	16	20 9 44.85	2.5236	23 5 34.6	4.872
17	18 10 15.90	2.5172	24 0 53.4	2.528	17	20 12 16.19	2.5210	23 0 37.8	5.022
18	18 12 47.02	2.5201	24 3 20.5	2.376	18	20 14 47.37	2.5183	22 55 31.9	5.172
19	18 15 18.31	2.5228	24 5 38.5	2.223	19	20 17 18.39	2.5156	22 50 17.1	5.322
20	18 17 49.76	2.5255	24 7 47.3	2.068	20	20 19 49.24	2.5127	22 44 53.3	5.471
21	18 20 21.37	2.5281	24 9 46.7	1.913	21	20 22 19.92	2.5098	22 39 20.6	5.618
22	18 22 53.13	2.5305	24 11 36.9	1.758	22	20 24 50.42	2.5068	22 33 39.1	5.765
23	18 25 25.03	2.5327	S. 24 13 17.7	1.602	23	20 27 20.74	2.5038	S. 22 27 48.8	5.912
THURSDAY 26.					SATURDAY 28.				
0	18 27 57.06	2.5349	S. 24 14 49.2	1.446	0	20 29 50.88	2.5007	S. 22 21 49.7	6.057
1	18 30 29.22	2.5369	24 16 11.2	1.288	1	20 32 20.82	2.4973	22 15 41.9	6.202
2	18 33 1.49	2.5388	24 17 23.8	1.132	2	20 34 50.56	2.4941	22 9 25.4	6.346
3	18 35 33.88	2.5407	24 18 27.0	0.974	3	20 37 20.11	2.4907	22 3 0.4	6.487
4	18 38 6.38	2.5424	24 19 20.7	0.815	4	20 39 49.45	2.4872	21 56 26.9	6.630
5	18 40 38.97	2.5439	24 20 4.8	0.657	5	20 42 18.58	2.4837	21 49 44.8	6.771
6	18 43 11.65	2.5454	24 20 39.5	0.498	6	20 44 47.50	2.4802	21 42 54.4	6.910
7	18 45 44.42	2.5468	24 21 4.6	0.339	7	20 47 16.21	2.4766	21 35 55.6	7.049
8	18 48 17.27	2.5480	24 21 20.2	0.180	8	20 49 44.69	2.4728	21 28 48.5	7.187
9	18 50 50.18	2.5490	24 21 26.2	-0.021	9	20 52 12.95	2.4692	21 21 33.1	7.324
10	18 53 23.15	2.5500	24 21 22.7	+0.139	10	20 54 40.99	2.4654	21 14 9.6	7.459
11	18 55 56.18	2.5509	24 21 9.5	0.299	11	20 57 8.80	2.4615	21 6 38.0	7.594
12	18 58 29.26	2.5516	24 20 46.8	0.458	12	20 59 36.37	2.4575	20 58 58.3	7.728
13	19 1 2.37	2.5522	24 20 14.5	0.619	13	21 2 3.70	2.4536	20 51 10.6	7.861
14	19 3 35.52	2.5527	24 19 32.5	0.780	14	21 4 30.80	2.4497	20 43 15.0	7.992
15	19 6 8.69	2.5529	24 18 40.9	0.940	15	21 6 57.66	2.4456	20 35 11.6	8.122
16	19 8 41.87	2.5531	24 17 39.7	1.100	16	21 9 24.27	2.4414	20 27 0.4	8.251
17	19 11 15.06	2.5532	24 16 28.9	1.260	17	21 11 50.63	2.4373	20 18 41.5	8.378
18	19 13 48.26	2.5532	24 15 8.5	1.420	18	21 14 16.75	2.4332	20 10 15.0	8.506
19	19 16 21.45	2.5532	24 13 38.5	1.580	19	21 16 42.61	2.4289	20 1 40.8	8.632
20	19 18 54.64	2.5529	24 11 58.9	1.741	20	21 19 8.22	2.4247	19 52 59.2	8.756
21	19 21 27.80	2.5524	24 10 9.6	1.901	21	21 21 33.58	2.4205	19 44 10.1	8.879
22	19 24 0.93	2.5519	24 8 10.8	2.059	22	21 23 58.68	2.4162	19 35 13.7	9.001
23	19 26 34.03	2.5513	24 6 2.5	2.219	23	21 26 23.52	2.4118	19 26 10.0	9.122
24	19 29 7.09	2.5506	S. 24 3 44.5	2.379	24	21 28 48.10	2.4075	S. 19 16 59.1	9.242

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 29.					TUESDAY, DECEMBER 1.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
1	21 28 48.10	2.4075	S. 19 16 59.1	9.242	23	19 26.34	2.2121	S. 10 0 46.3	13.411
2	21 31 12.42	2.4038	19 7 41.0	9.360	PHASES OF THE MOON.				
3	21 33 36.48	2.3987	18 58 15.9	9.476					
4	21 36 0.27	2.3944	18 48 43.9	9.592					
5	21 38 23.81	2.3901	18 39 4.9	9.707					
6	21 40 47.08	2.3856	18 29 19.1	9.820					
7	21 43 10.08	2.3812	18 19 26.5	9.932					
8	21 45 32.82	2.3767	18 9 27.2	10.042					
9	21 47 55.29	2.3723	17 59 21.4	10.152					
10	21 50 17.50	2.3679	17 49 9.0	10.260					
11	21 52 39.44	2.3634	17 38 50.2	10.367					
12	21 55 1.11	2.3590	17 28 25.0	10.472					
13	21 57 22.52	2.3546	17 17 53.6	10.575					
14	21 59 43.66	2.3502	17 7 16.0	10.678					
15	22 2 4.54	2.3457	16 56 32.2	10.780					
16	22 4 25.15	2.3413	16 45 42.4	10.880					
17	22 6 45.50	2.3370	16 34 46.6	10.978					
18	22 9 5.59	2.3326	16 23 45.0	11.075					
19	22 11 25.41	2.3282	16 12 37.6	11.172					
20	22 13 44.97	2.3238	16 1 24.4	11.267					
21	22 16 4.27	2.3196	15 50 5.6	11.359					
22	22 18 23.32	2.3153	15 38 41.3	11.452					
23	22 20 42.11	2.3110	15 27 11.4	11.543					
24	22 23 0.64	2.3067	S. 15 15 36.2	11.631					
MONDAY 30.					☾ First Quarter . . . Nov. d h m				
0	22 25 18.91	2.3024	S. 15 3 55.7	11.719	○ Full Moon 7 19 58.0				
1	22 27 36.93	2.2982	14 52 9.9	11.806	☾ Last Quarter 15 11 41.1				
2	22 29 54.70	2.2941	14 40 19.0	11.890	● New Moon 23 9 53.1				
3	22 32 12.22	2.2899	14 28 23.1	11.973	☾ First Quarter 30 9 44.4				
4	22 34 29.49	2.2857	14 16 22.2	12.056	☾ Perigee Nov. d h				
5	22 36 46.51	2.2817	14 4 16.4	12.137					
6	22 39 3.29	2.2776	13 52 5.7	12.217					
7	22 41 19.82	2.2736	13 39 50.4	12.294	☾ Apogee 16 9.5				
8	22 43 36.12	2.2697	13 27 30.4	12.372	☾ Perigee 30 3.2				
9	22 45 52.18	2.2657	13 15 5.8	12.447					
10	22 48 8.01	2.2618	13 2 36.7	12.521					
11	22 50 23.60	2.2579	12 50 3.3	12.593					
12	22 52 38.96	2.2541	12 37 25.5	12.665					
13	22 54 54.09	2.2503	12 24 43.5	12.734					
14	22 57 9.00	2.2466	12 11 57.4	12.802					
15	22 59 23.68	2.2429	11 59 7.2	12.870					
16	23 1 38.15	2.2393	11 46 13.0	12.935					
17	23 3 52.40	2.2357	11 33 15.0	12.999					
18	23 6 6.44	2.2322	11 20 13.1	13.062					
19	23 8 20.26	2.2287	11 7 7.5	13.124					
20	23 10 33.88	2.2253	10 53 58.2	13.184					
21	23 12 47.30	2.2219	10 40 45.4	13.243					
22	23 15 0.51	2.2185	10 27 29.0	13.301					
23	23 17 13.52	2.2152	10 14 9.3	13.356					
24	23 19 26.34	2.2121	S. 10 0 46.3	13.411					

GREENWICH MEAN TIME.										
LUNAR DISTANCES.										
Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	III ^h	P. L. of Diff.	VI ^h	P. L. of Diff.	IX ^h	P. L. of Diff.
1	SUN	W.	88 46 7	2660	90 23 41	2652	92 1 26	2644	93 39 21	2636
	Antares	W.	58 49 17	2362	60 33 46	2354	62 18 27	2346	64 3 20	2338
	SATURN	E.	56 55 11	2316	55 9 35	2309	53 23 49	2303	51 37 54	2297
	α Arietis	E.	89 32 25	2458	87 50 12	2451	86 7 49	2444	84 25 17	2438
	Aldebaran	E.	120 29 11	2341	118 44 11	2333	116 59 0	2326	115 13 39	2319
2	SUN	W.	101 51 26	2601	103 30 19	2595	105 9 21	2589	106 48 31	2583
	Antares	W.	72 50 29	2302	74 36 26	2296	76 22 32	2289	78 8 48	2283
	SATURN	E.	42 46 0	2267	40 59 12	2261	39 12 15	2256	37 25 11	2251
	α Arietis	E.	75 50 39	2414	74 7 24	2410	72 24 3	2407	70 40 38	2405
	Aldebaran	E.	106 24 17	2285	104 37 55	2279	102 51 25	2272	101 4 45	2266
3	SUN	W.	115 6 25	2556	116 46 21	2551	118 26 24	2546	120 6 33	2542
	Antares	W.	87 2 16	2256	88 49 21	2251	90 36 32	2247	92 23 50	2243
	α Arietis	E.	62 2 54	2401	60 19 20	2402	58 35 48	2405	56 52 20	2409
	Aldebaran	E.	92 9 19	2240	90 21 51	2235	88 34 16	2231	86 46 35	2227
4	Antares	W.	101 21 39	2289	103 9 24	2227	104 57 12	2225	106 45 2	2224
	α Aquilæ	W.	58 54 33	2436	60 20 0	3196	61 46 14	3160	63 13 11	3129
	α Arietis	E.	48 16 53	2447	46 34 25	2460	44 52 15	2475	43 10 26	2492
	Aldebaran	E.	77 46 50	2212	75 58 41	2210	74 10 28	2208	72 22 13	2207
5	α Aquilæ	W.	70 36 19	3014	72 6 14	2998	73 36 30	2985	75 7 2	2973
	Aldebaran	E.	63 20 45	2208	61 32 29	2209	59 44 15	2211	57 56 4	2214
	Pollux	E.	107 30 58	2210	105 42 45	2211	103 54 33	2212	102 6 23	2214
6	α Aquilæ	W.	82 42 25	2947	84 13 45	2947	85 45 4	2948	87 16 22	2952
	Fomalhaut	W.	48 13 39	2543	49 53 52	2532	51 34 21	2522	53 15 4	2513
	SATURN	W.	15 18 54	2251	17 6 5	2249	18 53 20	2247	20 40 37	2248
	Aldebaran	E.	48 56 20	2234	47 8 43	2240	45 21 14	2246	43 33 55	2253
	Pollux	E.	93 6 26	2229	91 18 42	2234	89 31 5	2239	87 43 36	2245
7	α Aquilæ	W.	94 51 1	2995	96 21 20	3008	97 51 23	3023	99 21 6	3040
	Fomalhaut	W.	61 40 40	2499	63 21 55	2500	65 3 8	2508	66 44 18	2506
	α Pegasi	W.	47 7 19	3084	48 35 48	3049	50 5 0	3019	51 34 49	2993
	SATURN	W.	29 36 22	2268	31 23 9	2275	33 9 46	2282	34 56 12	2289
	Aldebaran	E.	34 40 15	2299	32 54 13	2311	31 8 29	2323	29 23 3	2337
8	Pollux	E.	78 48 29	2281	77 2 1	2289	75 15 45	2298	73 29 42	2307
8	α Aquilæ	W.	106 43 49	3153	108 10 55	3181	109 37 28	3211	111 3 24	3243
	Fomalhaut	W.	75 8 27	2538	76 48 48	2547	78 28 56	2556	80 8 51	2566
	α Pegasi	W.	59 10 33	2915	60 42 33	2908	62 14 42	2902	63 46 59	2898
	SATURN	W.	43 45 7	2339	45 30 9	2350	47 14 55	2362	48 59 25	2374
	Pollux	E.	64 43 11	2362	62 58 42	2374	61 14 30	2387	59 30 36	2400
	JUPITER	E.	112 39 3	2408	110 55 31	2414	109 12 16	2426	107 29 18	2438
9	Fomalhaut	W.	88 24 33	2689	90 2 49	2643	91 40 46	2657	93 18 24	2672
	α Pegasi	W.	71 28 40	2907	73 0 50	2914	74 32 51	2921	76 4 44	2928
	SATURN	W.	57 37 23	2440	59 20 1	2453	61 2 20	2467	62 44 19	2482
	Pollux	E.	50 55 56	2471	49 14 2	2486	47 32 29	2502	45 51 18	2518
	JUPITER	E.	98 58 58	2504	97 17 51	2518	95 37 3	2533	93 56 35	2547
	VENUS	E.	125 27 52	2856	123 54 37	2872	122 21 42	2888	120 49 8	2904

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
1	SUN	W.	95 17 27	2629	96 55 42	2622	98 34 7	2615	100 12 42	2608
	Antares	W.	65 48 24	2331	67 33 39	2323	69 19 5	2316	71 4 42	2309
	SATURN	E.	49 51 50	2290	48 5 36	2284	46 19 13	2278	44 32 41	2272
	α Arietis	E.	82 42 37	2432	80 59 48	2427	79 16 52	2422	77 33 49	2418
	Aldebaran	E.	113 28 7	2312	111 42 25	2305	109 56 32	2298	108 10 29	2291
2	SUN	W.	108 27 50	2577	110 7 17	2571	111 46 52	2565	113 26 35	2560
	Antares	W.	79 55 13	2277	81 41 47	2271	83 28 29	2266	85 15 19	2261
	SATURN	E.	35 37 59	2247	33 50 41	2243	32 3 16	2239	30 15 46	2236
	α Arietis	E.	68 57 10	2403	67 13 38	2401	65 30 4	2400	63 46 29	2400
	Aldebaran	E.	99 17 56	2261	97 30 59	2255	95 43 53	2250	93 56 40	2245
3	SUN	W.	121 46 48	2538	123 27 8	2535	125 7 32	2533	126 48 0	2530
	Antares	W.	94 11 14	2239	95 58 44	2236	97 46 18	2233	99 33 57	2231
	α Arietis	E.	55 8 57	2413	53 25 41	2419	51 42 33	2427	49 59 36	2436
	Aldebaran	E.	84 58 48	2223	83 10 55	2220	81 22 58	2217	79 34 56	2214
4	Antares	W.	108 32 54	2224	110 20 46	2224	112 8 38	2225	113 56 29	2225
	α Aquilæ	W.	64 40 46	3101	66 8 55	3075	67 37 36	3052	69 6 45	3031
	α Arietis	E.	41 29 2	2513	39 48 7	2538	38 7 47	2567	36 28 6	2599
	Aldebaran	E.	70 33 57	2206	68 45 39	2206	66 57 21	2206	65 9 3	2206
5	α Aquilæ	W.	76 37 49	2964	78 8 47	2958	79 39 53	2952	81 11 7	2948
	Aldebaran	E.	56 7 57	2217	54 19 54	2210	52 31 57	2224	50 44 5	2229
	Pollux	E.	100 18 16	2216	98 30 12	2218	96 42 12	2221	94 54 16	2225
6	α Aquilæ	W.	88 47 35	2957	90 18 42	2965	91 49 39	2973	93 20 26	2983
	Fomalhaut	W.	54 55 59	2507	56 37 2	2503	58 18 11	2500	59 59 25	2499
	SATURN	W.	22 27 55	2249	24 15 10	2252	26 2 21	2256	27 49 25	2261
	Aldebaran	E.	41 46 46	2260	39 59 48	2269	38 13 3	2279	36 26 32	2288
	Pollux	E.	85 56 15	2251	84 9 3	2257	82 22 1	2264	80 35 9	2272
7	α Aquilæ	W.	100 50 29	3059	102 19 29	3080	103 48 3	3102	105 16 10	3126
	Fomalhaut	W.	68 25 23	2511	70 6 21	2516	71 47 12	2522	73 27 54	2529
	α Pegasi	W.	53 5 11	2971	54 36 0	2952	56 7 13	2937	57 38 45	2924
	SATURN	W.	36 42 27	2298	38 28 29	2308	40 14 16	2318	41 59 49	2328
	Aldebaran	E.	27 37 57	2353	25 53 14	2369	24 8 55	2387	22 25 2	2408
	Pollux	E.	71 43 53	2317	69 58 19	2328	68 13 1	2339	66 27 58	2350
8	α Aquilæ	W.	112 28 42	3278	113 53 19	3316	115 17 12	3355	116 40 20	3395
	Fomalhaut	W.	81 48 32	2578	83 27 57	2590	85 7 6	2602	86 45 58	2615
	α Pegasi	W.	65 19 20	2898	66 51 42	2898	68 24 3	2899	69 56 23	2902
	SATURN	W.	50 43 37	2387	52 27 31	2399	54 11 7	2412	55 54 25	2426
	Pollux	E.	57 47 1	2413	56 3 45	2427	54 20 49	2441	52 38 12	2455
	JUPITER	E.	105 46 38	2451	104 4 15	2464	102 22 11	2477	100 40 25	2490
9	Fomalhaut	W.	94 55 41	2688	96 32 37	2704	98 9 11	2720	99 45 24	2738
	α Pegasi	W.	77 36 28	2938	79 7 59	2949	80 39 16	2959	82 10 20	2970
	SATURN	W.	64 25 58	2497	66 7 16	2512	67 48 13	2526	69 28 50	2541
	Pollux	E.	44 10 29	2534	42 30 3	2551	40 50 0	2568	39 10 21	2585
	JUPITER	E.	92 16 27	2562	90 36 40	2577	88 57 13	2592	87 18 8	2607
	VENUS	E.	119 16 53	2920	117 44 59	2935	116 13 25	2951	114 42 11	2968

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
10	Fomalhaut W.	101 21 14	2756	102 56 40	2774	104 31 43	2792	106 6 22	2810
	α Pegasi W.	83 41 11	2983	85 11 45	2997	86 42 2	3011	88 12 2	3026
	SATURN W.	71 9 6	2557	72 49 0	2572	74 28 33	2587	76 7 46	2603
	α Arietis W.	40 7 0	2881	41 39 43	2877	43 12 31	2875	44 45 22	2875
	Pollux E.	37 31 5	2603	35 52 14	2621	34 13 48	2640	32 35 48	2660
	JUPITER E.	85 39 23	2623	84 0 59	2638	82 22 56	2654	80 45 14	2670
	VENUS E.	113 11 18	2985	111 40 46	3001	110 10 35	3018	108 40 45	3035
11	Fomalhaut W.	113 53 24	2910	115 25 30	2931	116 57 9	2953	118 28 21	2975
	α Pegasi W.	95 37 8	3110	97 5 6	3127	98 32 43	3146	99 59 57	3165
	SATURN W.	84 18 31	2680	85 55 37	2695	87 32 23	2710	89 8 49	2726
	α Arietis W.	52 29 0	2896	54 1 24	2903	55 33 39	2910	57 5 45	2918
	Aldebaran W.	20 28 49	2765	22 4 3	2772	23 39 7	2780	25 14 1	2789
	JUPITER E.	72 42 3	2749	71 6 28	2764	69 31 13	2780	67 56 19	2795
	VENUS E.	101 16 48	3120	99 49 3	3137	98 21 38	3154	96 54 34	3171
	Spica E.	114 19 0	2785	112 42 54	2740	111 7 8	2755	109 31 41	2770
12	SATURN W.	97 5 59	2800	98 40 27	2814	100 14 37	2828	101 48 29	2841
	α Arietis W.	64 43 21	2967	66 14 14	2977	67 44 55	2988	69 15 23	2998
	Aldebaran W.	33 5 23	2842	34 38 57	2853	36 12 16	2865	37 45 20	2876
	JUPITER E.	60 6 47	2871	58 33 51	2886	57 1 14	2900	55 28 55	2914
	VENUS E.	89 44 6	3252	88 18 58	3267	86 54 8	3282	85 29 36	3298
	Spica E.	101 39 11	2841	100 5 36	2854	98 32 18	2868	96 59 18	2881
	SUN E.	128 45 42	3183	127 19 13	3198	125 53 1	3213	124 27 7	3227
13	SATURN W.	109 33 33	2905	111 5 45	2916	112 37 43	2928	114 9 26	2939
	α Arietis W.	76 44 27	3050	78 13 37	3060	79 42 35	3070	81 11 21	3080
	Aldebaran W.	45 26 58	2933	46 58 34	2944	48 29 57	2954	50 1 7	2965
	JUPITER E.	47 51 43	2981	46 21 7	2994	44 50 47	3007	43 20 43	3019
	VENUS E.	78 31 11	3367	77 8 18	3380	75 45 39	3393	74 23 15	3406
	Spica E.	89 18 28	2944	87 47 5	2956	86 15 57	2967	84 45 4	2978
	SUN E.	117 21 42	3294	115 57 24	3306	114 33 20	3318	113 9 30	3330
14	α Arietis W.	88 32 12	3127	89 59 49	3135	91 27 16	3143	92 54 34	3151
	Aldebaran W.	57 33 54	3010	59 3 54	3018	60 33 44	3026	62 3 24	3033
	JUPITER E.	35 54 3	3076	34 25 25	3087	32 57 0	3098	31 28 48	3109
	VENUS E.	67 34 34	3460	66 13 26	3470	64 52 28	3479	63 31 40	3488
	Spica E.	77 13 54	3028	75 44 17	3037	74 14 50	3046	72 45 34	3054
	SUN E.	106 13 33	3382	104 50 56	3391	103 28 30	3400	102 6 13	3408
15	α Arietis W.	100 8 46	3186	101 35 12	3192	103 1 31	3198	104 27 43	3204
	Aldebaran W.	69 29 45	3062	70 58 41	3066	72 27 31	3070	73 56 17	3074
	Pollux W.	25 30 26	3118	26 58 14	3116	28 26 4	3115	29 53 55	3114
	VENUS E.	56 49 55	3523	55 29 56	3528	54 10 3	3533	52 50 16	3537
	Spica E.	65 21 32	3088	63 53 8	3093	62 24 50	3099	60 56 39	3104
	SUN E.	95 16 57	3441	93 55 27	3446	92 34 2	3450	91 12 43	3454
16	Aldebaran W.	81 19 11	3084	82 47 39	3085	84 16 7	3085	85 44 35	3084
	Pollux W.	37 13 30	3109	38 41 29	3107	40 9 30	3105	41 37 33	3103
	VENUS E.	46 12 19	3552	44 52 52	3553	43 33 26	3554	42 14 2	3555
	Spica E.	53 37 2	3122	52 9 19	3124	50 41 39	3127	49 14 2	3129
	SUN E.	84 26 59	3460	83 5 57	3467	81 44 56	3467	80 23 55	3467

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
10	Fomalhaut W.	107 40 37	2829	109 14 27	2849	110 47 52	2869	112 20 51	2889
	α Pegasi W.	89 41 43	3042	91 11 4	3057	92 40 6	3074	94 8 47	3091
	SATURN W.	77 46 37	2819	79 25 6	2834	81 3 15	2849	82 41 3	2864
	α Arietis W.	46 18 13	2876	47 51 2	2879	49 23 47	2883	50 56 27	2889
	Pollux E.	30 58 15	2681	29 21 9	2702	27 44 32	2723	26 8 23	2746
	JUPITER E.	79 7 54	2686	77 30 55	2701	75 54 17	2717	74 18 0	2732
	VENUS E.	107 11 16	3052	105 42 8	3069	104 13 21	3086	102 44 54	3103
11	Fomalhaut W.	119 59 5	2908	121 29 19	3022	122 59 5	3046	124 28 21	3069
	α Pegasi W.	101 26 48	3185	102 53 15	3207	104 19 16	3227	105 44 52	3246
	SATURN W.	90 44 54	2741	92 20 39	2756	93 56 5	2770	95 31 12	2785
	α Arietis W.	58 37 40	2927	60 9 24	2937	61 40 55	2947	63 12 14	2957
	Aldebaran W.	26 48 43	2798	28 23 13	2808	29 57 31	2819	31 31 35	2831
	JUPITER E.	66 21 45	2811	64 47 31	2826	63 13 37	2841	61 40 2	2856
	VENUS E.	95 27 50	3187	94 1 25	3203	92 35 20	3219	91 9 33	3236
	Spica E.	107 56 34	2784	106 21 46	2798	104 47 16	2812	103 13 4	2827
12	SATURN W.	103 22 4	2855	104 55 21	2868	106 28 21	2880	108 1 5	2893
	α Arietis W.	70 45 38	3009	72 15 40	3020	73 45 28	3030	75 15 4	3040
	Aldebaran W.	39 18 9	2888	40 50 43	2900	42 23 2	2911	43 55 7	2922
	JUPITER E.	53 56 54	2928	52 25 11	2942	50 53 45	2955	49 22 36	2968
	VENUS E.	84 5 22	3312	82 41 25	3326	81 17 44	3340	79 54 20	3354
	Spica E.	95 26 35	2894	93 54 9	2907	92 22 0	2920	90 50 6	2932
	SUN E.	123 1 29	3241	121 36 8	3255	120 11 4	3268	118 46 16	3281
13	SATURN W.	115 40 55	2950	117 12 11	2960	118 43 13	2970	120 14 3	2980
	α Arietis W.	82 39 54	3090	84 8 15	3100	85 36 25	3109	87 4 24	3118
	Aldebaran W.	51 32 4	2975	53 2 48	2984	54 33 21	2993	56 3 43	3001
	JUPITER E.	41 50 54	3031	40 21 20	3043	38 52 0	3054	37 22 55	3065
	VENUS E.	73 1 5	3418	71 39 9	3429	70 17 25	3440	68 55 54	3450
	Spica E.	83 14 24	2989	81 43 58	2999	80 13 44	3009	78 43 43	3019
	SUN E.	111 45 53	3341	110 22 30	3352	108 59 19	3363	107 36 20	3373
14	α Arietis W.	94 21 42	3159	95 48 40	3166	97 15 30	3173	98 42 12	3179
	Aldebaran W.	63 32 56	3040	65 2 19	3046	66 31 35	3052	68 0 43	3057
	JUPITER E.	30 0 50	3120	28 33 5	3132	27 5 34	3143	25 38 17	3154
	VENUS E.	62 11 2	3496	60 50 33	3503	59 30 13	3510	58 10 0	3517
	Spica E.	71 16 28	3061	69 47 31	3069	68 18 43	3076	66 50 4	3082
	SUN E.	100 44 6	3416	99 22 8	3423	98 0 17	3429	96 38 34	3435
15	α Arietis W.	105 53 48	3209	107 19 47	3214	108 45 40	3218	110 11 28	3223
	Aldebaran W.	75 24 58	3077	76 53 36	3080	78 22 10	3082	79 50 41	3083
	Pollux W.	31 21 48	3113	32 49 41	3112	34 17 36	3111	35 45 32	3110
	VENUS E.	51 30 33	3541	50 10 55	3544	48 51 20	3547	47 31 48	3550
	Spica E.	59 28 34	3108	58 0 34	3112	56 32 39	3116	55 4 49	3119
	SUN E.	89 51 28	3457	88 30 16	3460	87 9 8	3463	85 48 2	3467
16	Aldebaran W.	87 13 3	3083	88 41 33	3083	90 10 3	3081	91 38 36	307
	Pollux W.	43 5 38	3101	44 33 46	3099	46 1 57	3096	47 30 12	3092
	VENUS E.	40 54 38	3555	39 35 14	3554	38 15 49	3552	36 56 22	3550
	Spica E.	47 46 27	3131	46 18 55	3132	44 51 24	3133	43 23 55	3134
	SUN E.	79 2 54	3466	77 41 52	3464	76 20 48	3462	74 59 41	3460

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
17	Aldebaran W.	93 7 12	3076	94 35 51	3073	96 4 33	3069	97 33 20	3065
	Pollux W.	48 58 31	3088	50 26 54	3084	51 55 23	3079	53 23 57	3074
	Spica E.	41 56 27	3136	40 29 1	3137	39 1 36	3138	37 34 13	3139
	SUN E.	73 38 32	3457	72 17 20	3454	70 56 4	3450	69 34 44	3445
18	Aldebaran W.	104 58 41	3038	106 28 6	3032	107 57 39	3025	109 27 20	3018
	Pollux W.	60 48 29	3045	62 17 46	3038	63 47 12	3030	65 16 48	3022
	SUN E.	62 46 34	3415	61 24 35	3408	60 2 28	3400	58 40 12	3393
19	Pollux W.	72 47 19	2978	74 17 59	2968	75 48 51	2958	77 19 56	2948
	JUPITER W.	23 33 25	3072	25 2 9	3056	26 31 13	3040	28 0 37	3024
	SUN E.	51 46 29	3347	50 23 12	3337	48 59 43	3326	47 36 2	3316
20	Pollux W.	84 58 40	2894	86 31 7	2883	88 3 48	2871	89 36 44	2859
	JUPITER W.	35 32 11	2953	37 3 22	2939	38 34 51	2925	40 6 38	2912
	SUN E.	40 34 25	3259	39 9 25	3247	37 44 11	3234	36 18 42	3222
21	Pollux W.	97 25 19	2798	98 59 49	2786	100 34 35	2773	102 9 38	2761
	JUPITER W.	47 49 52	2844	49 23 23	2831	50 57 11	2817	52 31 17	2804
	SUN E.	29 7 41	3161	27 40 45	3149	26 13 34	3137	24 46 9	3125
25	SUN W.	19 47 26	2787	21 22 11	2776	22 57 10	2766	24 32 23	2756
	Fomalhaut E.	71 27 27	2632	69 49 15	2629	68 10 59	2626	66 32 39	2624
	α Pegasi E.	89 30 16	2845	87 56 47	2839	86 23 10	2833	84 49 24	2827
	SATURN E.	100 51 29	2429	99 8 35	2421	97 25 30	2413	95 42 14	2405
26	SUN W.	32 31 35	2714	34 7 58	2707	35 44 29	2700	37 21 10	2693
	Fomalhaut E.	58 20 48	2629	56 42 33	2634	55 4 25	2640	53 26 25	2648
	α Pegasi E.	76 59 23	2818	75 25 19	2819	73 51 16	2822	72 17 17	2826
	SATURN E.	87 3 29	2374	85 19 17	2369	83 34 57	2364	81 50 30	2359
	α Arietis E.	119 42 21	2545	118 2 11	2535	116 21 47	2525	114 41 9	2516
27	SUN W.	45 26 28	2667	47 3 52	2663	48 41 21	2659	50 18 56	2655
	Fomalhaut E.	45 19 50	2716	43 43 31	2738	42 7 41	2762	40 32 23	2790
	α Pegasi E.	64 29 12	2866	62 56 10	2880	61 23 26	2895	59 51 1	2912
	SATURN E.	73 6 31	2337	71 21 25	2334	69 36 15	2331	67 51 0	2327
	α Arietis E.	106 14 54	2477	104 33 9	2471	102 51 15	2466	101 9 14	2461
28	SUN W.	58 28 1	2640	60 6 2	2638	61 44 6	2635	63 22 13	2633
	α Pegasi E.	52 15 27	3039	50 46 3	3074	49 17 22	3114	47 49 30	3159
	SATURN E.	59 3 43	2315	57 18 6	2313	55 32 26	2312	53 46 44	2311
	α Arietis E.	92 37 37	2443	90 55 4	2441	89 12 28	2439	87 29 49	2438
29	SUN W.	71 33 24	2625	73 11 44	2624	74 50 6	2624	76 28 29	2624
	SATURN E.	44 57 50	2307	43 12 1	2307	41 26 11	2307	39 40 22	2307
	α Arietis E.	78 56 19	2437	77 13 37	2438	75 30 57	2440	73 48 19	2442
	Aldebaran E.	109 32 32	2311	107 46 49	2311	106 1 6	2311	104 15 22	2310
30	SUN W.	84 40 31	2621	86 18 57	2622	87 57 22	2622	89 35 47	2622
	SATURN E.	30 51 31	2314	29 5 51	2316	27 20 15	2319	25 34 43	2322
	α Arietis E.	65 16 3	2459	63 33 52	2464	61 51 48	2470	60 9 52	2477
	Aldebaran E.	95 26 28	2309	93 40 41	2308	91 54 53	2308	90 9 5	2309

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
			° ' "		° ' "		° ' "		° ' "	
17	Aldebaran	W.	99 2 12	3061	100 31 9	3056	102 0 13	3050	103 29 23	3044
	Pollux	W.	54 52 38	3069	56 21 25	3064	57 50 19	3058	59 19 20	3052
	Spica	E.	36 6 51	3141	34 39 31	3143	33 12 14	3146	31 45 0	3149
	SUN	E.	68 13 18	3140	66 51 47	3434	65 30 9	3499	64 8 25	3423
18	Aldebaran	W.	110 57 10	3010	112 27 10	3002	113 57 19	2994	115 27 39	2985
	Pollux	W.	66 46 33	3014	68 16 28	3005	69 46 34	2997	71 16 51	2988
	SUN	E.	57 17 48	3385	55 55 14	3376	54 32 30	3366	53 9 35	3356
19	Pollux	W.	78 51 14	2938	80 22 45	2927	81 54 29	2916	83 26 27	2905
	JUPITER	W.	29 30 20	3009	31 0 21	2995	32 30 40	2981	34 1 17	2967
	SUN	E.	46 12 9	3305	44 48 3	3294	43 23 44	3282	41 59 11	3270
20	Pollux	W.	91 9 56	2847	92 43 23	2835	94 17 6	2823	95 51 4	2810
	JUPITER	W.	41 38 42	2896	43 11 3	2884	44 43 42	2871	46 16 39	2858
	SUN	E.	34 52 59	3210	33 27 1	3198	32 0 49	3185	30 34 22	3173
21	Pollux	W.	103 44 57	2749	105 20 32	2736	106 56 24	2724	108 32 32	2712
	JUPITER	W.	54 5 41	2790	55 40 22	2777	57 15 20	2763	58 50 36	2750
	SUN	E.	23 18 30	3114	21 50 38	3104	20 22 33	3093	18 54 15	3083
25	SUN	W.	26 7 50	2746	27 43 29	2737	29 19 20	2729	30 55 22	2721
	Fomalhaut	E.	64 54 16	2623	63 15 52	2624	61 37 29	2625	59 59 7	2626
	α Pegasi	E.	83 15 31	2823	81 41 33	2820	80 7 32	2818	78 33 28	2818
	SATURN	E.	93 58 48	2399	92 15 12	2393	90 31 27	2386	88 47 32	2380
26	SUN	W.	38 57 59	2687	40 34 56	2682	42 11 59	2677	43 49 10	2672
	Fomalhaut	E.	51 48 36	2658	50 10 59	2669	48 33 37	2682	46 56 33	2698
	α Pegasi	E.	70 43 23	2831	69 9 35	2838	67 35 56	2846	66 2 28	2855
	SATURN	E.	80 5 55	2354	78 21 14	2349	76 36 26	2345	74 51 31	2341
	α Arietis	E.	113 0 17	2507	111 19 13	2498	109 37 57	2490	107 56 30	2484
27	SUN	W.	51 56 36	2652	53 34 21	2649	55 12 10	2646	56 50 4	2643
	Fomalhaut	E.	38 57 42	2825	37 23 46	2865	35 50 42	2910	34 18 36	2961
	α Pegasi	E.	58 18 58	2932	56 47 20	2954	55 16 10	2979	53 45 31	3007
	SATURN	E.	66 5 40	2384	64 20 16	2322	62 34 49	2320	60 49 18	2317
	α Arietis	E.	99 27 6	2457	97 44 52	2453	96 2 32	2449	94 20 7	2446
28	SUN	W.	65 0 23	2632	66 38 35	2630	68 16 49	2628	69 55 5	2626
	α Pegasi	E.	46 22 32	2309	44 56 34	2367	43 31 44	2331	42 8 8	2300
	SATURN	E.	52 1 0	2310	50 15 14	2309	48 29 27	2308	46 43 39	2307
	α Arietis	E.	85 47 9	2437	84 4 27	2437	82 21 45	2436	80 39 2	2436
29	SUN	W.	78 6 52	2623	79 45 16	2622	81 23 41	2622	83 2 6	2622
	SATURN	E.	37 54 33	2308	36 8 45	2309	34 22 58	2310	32 37 13	2312
	α Arietis	E.	72 5 43	2444	70 23 11	2447	68 40 43	2450	66 58 20	2455
	Aldebaran	E.	102 29 37	2309	100 43 51	2309	98 58 4	2308	97 12 16	2308
30	SUN	W.	91 14 12	2623	92 52 36	2623	94 31 0	2624	96 9 23	2625
	SATURN	E.	23 49 16	2327	22 3 57	2333	20 18 46	2340	18 33 46	2349
	α Arietis	E.	58 28 6	2484	56 46 30	2492	55 5 4	2501	53 23 52	2511
	Aldebaran	E.	88 23 17	2309	86 37 31	2309	84 51 45	2310	83 6 0	2311

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S						Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from		Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Added to Apparent Time.				
Tues.	1	^h 16 ^m 28 ^s 48.92	^s 10.794	[°] S. 21 ['] 47 ["] 50.8	["] - 23.46	['] 16 ["] 15.38	^s 70.24	^m 10 ^s 54.83	^s 0.934		
Wed.	2	16 33 8.28	10.819	21 57 1.3	22.40	16 15.53	70.33	10 32.09	0.960		
Thur.	3	16 37 28.25	10.844	22 5 46.3	21.33	16 15.68	70.41	10 8.74	0.985		
Frid.	4	16 41 48.81	10.868	22 14 5.7	- 20.26	16 15.83	70.49	9 44.81	1.009		
Sat.	5	16 46 9.93	10.891	22 21 59.2	19.18	16 15.97	70.57	9 20.31	1.032		
SUN.	6	16 50 31.60	10.914	22 29 26.5	18.09	16 16.11	70.64	8 55.27	1.054		
Mon.	7	16 54 53.79	10.935	22 36 27.6	- 16.99	16 16.24	70.71	8 29.70	1.075		
Tues.	8	16 59 16.47	10.955	22 43 2.0	15.88	16 16.36	70.78	8 3.65	1.095		
Wed.	9	17 3 39.64	10.974	22 49 9.6	14.76	16 16.48	70.84	7 37.11	1.114		
Thur.	10	17 8 3.24	10.992	22 54 50.4	- 13.63	16 16.59	70.90	7 10.14	1.132		
Frid.	11	17 12 27.28	11.010	23 0 4.0	12.50	16 16.70	70.95	6 42.73	1.150		
Sat.	12	17 16 51.73	11.026	23 4 50.3	11.36	16 16.80	71.00	6 14.93	1.167		
SUN.	13	17 21 16.55	11.041	23 9 9.1	- 10.21	16 16.90	71.05	5 46.75	1.182		
Mon.	14	17 25 41.70	11.054	23 13 0.4	9.06	16 16.99	71.09	5 18.22	1.194		
Tues.	15	17 30 7.16	11.067	23 16 23.8	7.90	16 17.08	71.13	4 49.40	1.205		
Wed.	16	17 34 32.90	11.078	23 19 19.5	- 6.74	16 17.16	71.16	4 20.30	1.216		
Thur.	17	17 38 58.89	11.087	23 21 47.2	5.57	16 17.24	71.19	3 50.94	1.227		
Frid.	18	17 43 25.09	11.095	23 23 46.9	4.40	16 17.31	71.21	3 21.38	1.236		
Sat.	19	17 47 51.47	11.102	23 25 18.3	- 3.22	16 17.38	71.23	2 51.64	1.242		
SUN.	20	17 52 17.98	11.107	23 26 21.7	2.05	16 17.44	71.24	2 21.77	1.246		
Mon.	21	17 56 44.60	11.111	23 26 56.7	- 0.87	16 17.50	71.25	1 51.79	1.249		
Tues.	22	18 1 11.29	11.113	23 27 3.4	+ 0.31	16 17.55	71.26	1 21.74	1.251		
Wed.	23	18 5 38.01	11.113	23 26 41.8	1.49	16 17.60	71.26	0 51.66	1.252		
Thur.	24	18 10 4.71	11.111	23 25 51.9	2.67	16 17.65	71.25	0 21.60	1.250		
Frid.	25	18 14 31.36	11.109	23 24 33.7	+ 3.85	16 17.70	71.24	0 8.40	1.247		
Sat.	26	18 18 57.92	11.104	23 22 47.1	5.03	16 17.74	71.23	0 38.32	1.242		
SUN.	27	18 23 24.35	11.098	23 20 32.4	6.20	16 17.78	71.21	1 8.11	1.236		
Mon.	28	18 27 50.60	11.090	23 17 49.4	+ 7.37	16 17.81	71.19	1 37.72	1.229		
Tues.	29	18 32 16.65	11.080	23 14 38.4	8.54	16 17.84	71.17	2 7.14	1.220		
Wed.	30	18 36 42.46	11.070	23 10 59.4	9.70	16 17.86	71.14	2 36.31	1.209		
Thur.	31	18 41 7.99	11.058	23 6 52.4	10.86	16 17.88	71.10	3 5.21	1.197		
Frid.	32	18 45 33.22	11.045	S. 23 2 17.7	+ 12.01	16 17.89	71.06	3 33.80	1.184		

NOTE.—The mean time of semidiameter passing the meridian may be found by subtracting 0.19 from the sidereal time.

The sign - prefixed to the hourly change of declination indicates that south declinations are increasing; the sign + indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to		Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Subtracted from Mean Time.			
Tues.	1	h m s 16 28 50.88	s 10.791	° ' " S. 21 47 55.1	" -23.45	m s 10 54.66	s 0.934	h m s 16 39 45.54	
Wed.	2	16 33 10.18	10.817	21 57 5.2	22.40	10 31.92	0.960	16 43 42.10	
Thur.	3	16 37 30.08	10.842	22 5 49.9	21.33	10 8.57	0.985	16 47 38.65	
Frid.	4	16 41 50.57	10.866	22 14 9.0	-20.26	9 44.64	1.009	16 51 35.21	
Sat.	5	16 46 11.62	10.889	22 22 2.2	19.18	9 20.15	1.032	16 55 31.77	
SUN.	6	16 50 33.22	10.911	22 29 29.2	18.09	8 55.11	1.054	16 59 28.33	
Mon.	7	16 54 55.33	10.932	22 36 30.0	-16.98	8 29.55	1.075	17 3 24.88	
Tues.	8	16 59 17.94	10.952	22 43 4.1	15.87	8 3.50	1.095	17 7 21.44	
Wed.	9	17 3 41.03	10.971	22 49 11.5	14.75	7 36.97	1.114	17 11 18.00	
Thur.	10	17 8 4.56	10.990	22 54 52.0	-13.62	7 10.00	1.132	17 15 14.56	
Frid.	11	17 12 28.52	11.007	23 0 5.4	12.49	6 42.60	1.150	17 19 11.12	
Sat.	12	17 16 52.88	11.023	23 4 51.5	11.35	6 14.80	1.167	17 23 7.68	
SUN.	13	17 21 17.61	11.037	23 9 10.1	-10.20	5 46.63	1.182	17 27 4.24	
Mon.	14	17 25 42.68	11.051	23 13 1.2	9.05	5 18.11	1.194	17 31 0.79	
Tues.	15	17 30 8.05	11.063	23 16 24.5	7.89	4 49.30	1.205	17 34 57.35	
Wed.	16	17 34 33.70	11.074	23 19 20.0	-6.73	4 20.21	1.216	17 38 53.91	
Thur.	17	17 38 59.60	11.084	23 21 47.6	5.56	3 50.86	1.227	17 42 50.46	
Frid.	18	17 43 25.71	11.092	23 23 47.1	4.39	3 21.31	1.236	17 46 47.02	
Sat.	19	17 47 52.00	11.098	23 25 18.5	-3.22	2 51.58	1.242	17 50 43.58	
SUN.	20	17 52 18.42	11.104	23 26 21.8	2.05	2 21.72	1.246	17 54 40.14	
Mon.	21	17 56 44.95	11.107	23 26 56.7	-0.87	1 51.75	1.250	17 58 36.70	
Tues.	22	18 1 11.55	11.108	23 27 3.4	+0.31	1 21.71	1.252	18 2 33.26	
Wed.	23	18 5 38.18	11.109	23 26 41.8	1.49	0 51.64	1.253	18 6 29.82	
Thur.	24	18 10 4.78	11.107	23 25 51.9	2.67	0 21.59	1.251	18 10 26.37	
Frid.	25	18 14 31.34	11.105	23 24 33.7	+3.84	0 8.40	1.248	18 14 22.93	
Sat.	26	18 18 57.80	11.100	23 22 47.2	5.02	0 38.31	1.243	18 18 19.49	
SUN.	27	18 23 24.14	11.094	23 20 32.5	6.20	1 8.09	1.237	18 22 16.05	
Mon.	28	18 27 50.30	11.086	23 17 49.6	+7.37	1 37.69	1.230	18 26 12.61	
Tues.	29	18 32 16.26	11.077	23 14 38.7	8.54	2 7.10	1.220	18 30 9.16	
Wed.	30	18 36 41.98	11.066	23 10 59.8	9.70	2 36.26	1.209	18 34 5.72	
Thur.	31	18 41 7.43	11.054	23 6 53.0	10.86	3 5.15	1.197	18 38 2.28	
Frid.	32	18 45 32.57	11.042	S. 23 2 18.4	+12.01	3 33.73	1.184	18 41 58.84	

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
 The sign — prefixed to the hourly change of declination indicates that south declinations are increasing; the sign + indicates that south declinations are decreasing.

Diff. for 1 Hour,
 + 9°.8565.
 (Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ'					
1	336	248 55 42.5	55 14.6	152.11	— 0.83	9.993 7794	— 29.6	h m s 7 19 2.34
2	337	249 56 33.7	56 5.5	152.15	0.84	9.993 7094	28.7	7 15 6.43
3	338	250 57 25.6	56 57.3	152.18	0.81	9.993 6415	27.8	7 11 10.52
4	339	251 58 18.4	57 49.9	152.21	— 0.76	9.993 5759	— 26.8	7 7 14.60
5	340	252 59 12.0	58 43.4	152.25	0.67	9.993 5128	25.8	7 3 18.69
6	341	253 60 6.6	59 37.7	152.29	0.56	9.993 4521	24.7	6 59 22.78
7	342	255 1 1.9	0 32.9	152.33	— 0.43	9.993 3940	— 23.6	6 55 26.87
8	343	256 1 58.2	1 29.0	152.37	0.30	9.993 3386	22.5	6 51 30.96
9	344	257 2 55.5	2 26.1	152.41	0.17	9.993 2858	21.4	6 47 35.04
10	345	258 3 53.7	3 24.2	152.45	— 0.04	9.993 2357	— 20.3	6 43 39.13
11	346	259 4 53.0	4 23.2	152.49	+ 0.07	9.993 1880	19.3	6 39 43.22
12	347	260 5 53.2	5 23.3	152.54	0.17	9.993 1429	18.3	6 35 47.31
13	348	261 6 54.4	6 24.3	152.58	+ 0.25	9.993 1002	— 17.3	6 31 51.40
14	349	262 7 56.6	7 26.3	152.62	0.30	9.993 0598	16.3	6 27 55.48
15	350	263 8 59.7	8 29.3	152.66	0.33	9.993 0217	15.4	6 23 59.57
16	351	264 10 3.8	9 33.2	152.70	+ 0.33	9.992 9858	— 14.5	6 20 3.66
17	352	265 11 8.8	10 37.9	152.73	0.29	9.992 9519	13.7	6 16 7.75
18	353	266 12 14.6	11 43.6	152.76	0.24	9.992 9201	12.9	6 12 11.83
19	354	267 13 21.3	12 50.1	152.79	+ 0.16	9.992 8902	— 12.1	6 8 15.92
20	355	268 14 28.7	13 57.3	152.82	+ 0.05	9.992 8621	11.3	6 4 20.01
21	356	269 15 36.8	15 5.2	152.85	— 0.07	9.992 8357	10.6	6 0 24.10
22	357	270 16 45.4	16 13.7	152.87	— 0.19	9.992 8110	— 9.9	5 56 28.18
23	358	271 17 54.6	17 22.6	152.89	0.34	9.992 7878	9.3	5 52 32.27
24	359	272 19 4.1	18 32.0	152.90	0.47	9.992 7662	8.6	5 48 36.36
25	360	273 20 13.9	19 41.6	152.91	— 0.60	9.992 7463	— 8.0	5 44 40.45
26	361	274 21 23.8	20 51.3	152.91	0.70	9.992 7279	7.3	5 40 44.53
27	362	275 22 33.8	22 1.1	152.91	0.78	9.992 7113	6.5	5 36 48.62
28	363	276 23 43.7	23 10.8	152.91	— 0.83	9.992 6966	— 5.7	5 32 52.71
29	364	277 24 53.5	24 20.4	152.91	0.85	9.992 6838	4.9	5 28 56.80
30	365	278 26 3.2	25 29.9	152.90	0.83	9.992 6732	4.0	5 25 0.89
31	366	279 27 12.6	26 39.2	152.89	0.78	9.992 6649	3.0	5 21 4.98
32	367	280 28 21.8	27 48.2	152.88	— 0.70	9.992 6590	— 1.9	5 17 9.06

NOTE.—The longitudes in the column λ are referred to the true equinox of their own date, while those in the column λ' are referred to the mean equinox of the beginning of the Besselian fictitious year.

Diff. for 1 Hour,
— 9^s.8296.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.

SEMIDIAMETER.

HORIZONTAL PARALLAX.

UPPER TRANSIT.

AGE.

Noon.

Midnight.

Noon.

Diff. for
1 Hour.

Midnight.

Diff. for
1 Hour.Meridian of
Greenwich.Diff. for
1 Hour.

Noon.

"

"

"

"

"

"

h

m

m

d

Day of the Month.	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
1	16 9.3	16 8.6	59 11.6	-0.16	59 9.1	-0.25	6 53.7	2.10	7.6
2	16 7.7	16 6.4	59 5.6	0.35	59 0.8	0.45	7 43.4	2.04	8.6
3	16 4.8	16 2.8	58 54.8	0.55	58 47.6	0.66	8 32.2	2.03	9.6
4	16 0.4	15 57.7	58 38.9	-0.78	58 28.9	-0.89	9 21.4	2.06	10.6
5	15 54.6	15 51.1	58 17.5	1.01	58 4.8	1.12	10 11.6	2.13	11.6
6	15 47.3	15 43.1	57 50.7	1.22	57 35.4	1.31	11 3.5	2.19	12.6
7	15 38.6	15 34.0	57 19.2	-1.39	57 2.1	-1.45	11 56.9	2.25	13.6
8	15 29.2	15 24.3	56 44.4	1.48	56 26.4	1.50	12 51.2	2.26	14.6
9	15 19.4	15 14.6	56 8.5	1.48	55 50.8	1.45	13 45.3	2.22	15.6
10	15 9.9	15 5.5	55 33.7	-1.39	55 17.6	-1.30	14 37.8	2.14	16.6
11	15 1.5	14 57.8	55 2.6	1.18	54 49.2	1.05	15 27.8	2.03	17.6
12	14 54.6	14 52.0	54 37.5	0.90	54 27.8	0.72	16 15.1	1.91	18.6
13	14 49.9	14 48.5	54 20.2	-0.53	54 15.0	-0.33	16 59.7	1.81	19.6
14	14 47.8	14 47.7	54 12.3	-0.12	54 12.1	+0.10	17 42.2	1.75	20.6
15	14 48.4	14 49.8	54 14.6	+0.32	54 19.8	0.54	18 23.5	1.71	21.6
16	14 51.9	14 54.8	54 27.6	+0.76	54 38.0	+0.97	19 4.5	1.71	22.6
17	14 58.3	15 2.4	54 50.9	1.17	55 6.1	1.36	19 46.2	1.76	23.6
18	15 7.2	15 12.4	55 23.5	1.53	55 42.8	1.68	20 29.7	1.86	24.6
19	15 18.1	15 24.1	56 3.6	+1.79	56 25.8	+1.88	21 16.2	2.01	25.6
20	15 30.4	15 36.8	56 48.8	1.93	57 12.2	1.95	22 6.4	2.18	26.6
21	15 43.2	15 49.4	57 35.6	1.93	57 58.4	1.86	23 1.0	2.36	27.6
22	15 55.3	16 0.9	58 20.2	+1.76	58 40.6	+1.61	23 59.6	2.51	28.6
23	16 5.9	16 10.3	58 59.0	1.44	59 15.1	1.23	0	.	0.0
24	16 13.9	16 16.8	59 28.5	1.00	59 39.1	0.76	1 0.6	2.57	1.0
25	16 18.9	16 20.2	59 46.8	+0.51	59 51.5	+0.27	2 2.0	2.53	2.0
26	16 20.7	16 20.4	59 53.2	+0.03	59 52.2	-0.19	3 1.5	2.42	3.0
27	16 19.4	16 17.8	59 48.6	-0.39	59 42.8	0.57	3 57.9	2.28	4.0
28	16 15.7	16 13.2	59 35.1	-0.71	59 25.7	-0.84	4 51.0	2.16	5.0
29	16 10.3	16 7.0	59 15.0	0.94	59 3.2	1.02	5 41.4	2.06	6.0
30	16 3.6	16 0.0	58 50.6	1.08	58 37.4	1.12	6 30.1	2.01	7.0
31	15 56.3	15 52.5	58 23.8	1.15	58 9.9	1.17	7 18.4	2.02	8.0
32	15 48.6	15 44.8	57 55.7	-1.18	57 41.5	-1.19	8 7.1	2.06	9.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 1.					THURSDAY 3.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	23 19 26.34	2.2121	S. 10 0 46.3	13.411	0	1 3 4.52	2.1313	N. 1 20 8.2	14.446
1	23 21 38.97	2.2089	9 47 20.0	13.464	1	1 5 12.40	2.1312	1 34 34.6	14.434
2	23 23 51.41	2.2057	9 33 50.6	13.516	2	1 7 20.27	2.1312	1 49 0.3	14.422
3	23 26 3.66	2.2027	9 20 18.1	13.566	3	1 9 28.15	2.1313	2 3 25.3	14.409
4	23 28 15.73	2.1997	9 6 42.7	13.615	4	1 11 36.03	2.1314	2 17 49.4	14.394
5	23 30 27.63	2.1968	8 53 4.3	13.663	5	1 13 43.92	2.1317	2 32 12.6	14.377
6	23 32 39.35	2.1939	8 39 23.1	13.710	6	1 15 51.83	2.1320	2 46 34.7	14.360
7	23 34 50.90	2.1911	8 25 39.1	13.756	7	1 17 59.76	2.1322	3 0 55.8	14.342
8	23 37 2.28	2.1883	8 11 52.4	13.799	8	1 20 7.70	2.1326	3 15 15.7	14.322
9	23 39 13.50	2.1856	7 58 3.2	13.841	9	1 22 15.67	2.1331	3 29 34.4	14.300
10	23 41 24.55	2.1829	7 44 11.5	13.882	10	1 24 23.67	2.1336	3 43 51.7	14.277
11	23 43 35.45	2.1804	7 30 17.4	13.922	11	1 26 31.70	2.1342	3 58 7.6	14.253
12	23 45 46.20	2.1779	7 16 20.9	13.960	12	1 28 39.77	2.1348	4 12 22.1	14.228
13	23 47 56.80	2.1755	7 2 22.2	13.997	13	1 30 47.88	2.1355	4 26 35.0	14.202
14	23 50 7.26	2.1731	6 48 21.3	14.032	14	1 32 56.03	2.1362	4 40 46.3	14.173
15	23 52 17.57	2.1707	6 34 18.3	14.067	15	1 35 4.23	2.1370	4 54 55.8	14.144
16	23 54 27.74	2.1685	6 20 13.3	14.099	16	1 37 12.47	2.1378	5 9 3.6	14.114
17	23 56 37.79	2.1663	6 6 6.4	14.131	17	1 39 20.77	2.1388	5 23 9.5	14.082
18	23 58 47.70	2.1642	5 51 57.6	14.162	18	1 41 29.13	2.1398	5 37 13.4	14.048
19	0 0 57.49	2.1621	5 37 47.0	14.190	19	1 43 37.55	2.1409	5 51 15.3	14.014
20	0 3 7.15	2.1600	5 23 34.8	14.217	20	1 45 46.04	2.1420	6 5 15.1	13.979
21	0 5 16.69	2.1581	5 9 21.0	14.243	21	1 47 54.59	2.1432	6 19 12.8	13.942
22	0 7 26.12	2.1562	4 55 5.6	14.268	22	1 50 3.22	2.1444	6 33 8.2	13.903
23	0 9 35.44	2.1545	S. 4 40 48.8	14.292	23	1 52 11.92	2.1456	N. 6 47 1.2	13.864
WEDNESDAY 2.					FRIDAY 4.				
0	0 11 44.66	2.1527	S. 4 26 30.6	14.314	0	1 54 20.69	2.1469	N. 7 0 51.9	13.823
1	0 13 53.77	2.1511	4 12 11.1	14.335	1	1 56 29.55	2.1483	7 14 40.0	13.781
2	0 16 2.79	2.1495	3 57 50.4	14.354	2	1 58 38.49	2.1497	7 28 25.6	13.738
3	0 18 11.71	2.1479	3 43 28.6	14.372	3	2 0 47.51	2.1512	7 42 8.6	13.693
4	0 20 20.54	2.1465	3 29 5.8	14.388	4	2 2 56.63	2.1527	7 55 48.8	13.647
5	0 22 29.29	2.1451	3 14 42.0	14.404	5	2 5 5.84	2.1543	8 9 26.2	13.599
6	0 24 37.95	2.1437	3 0 17.3	14.418	6	2 7 15.15	2.1559	8 23 0.7	13.551
7	0 26 46.54	2.1425	2 45 51.8	14.431	7	2 9 24.55	2.1576	8 36 32.3	13.502
8	0 28 55.05	2.1413	2 31 25.6	14.442	8	2 11 34.06	2.1593	8 50 0.9	13.451
9	0 31 3.50	2.1402	2 16 58.7	14.453	9	2 13 43.67	2.1611	9 3 26.4	13.398
10	0 33 11.88	2.1391	2 2 31.2	14.462	10	2 15 53.39	2.1628	9 16 48.7	13.344
11	0 35 20.19	2.1381	1 48 3.3	14.469	11	2 18 3.21	2.1647	9 30 7.7	13.289
12	0 37 28.45	2.1372	1 33 34.9	14.476	12	2 20 13.15	2.1666	9 43 23.4	13.233
13	0 39 36.66	2.1363	1 19 6.2	14.480	13	2 22 23.20	2.1686	9 56 35.7	13.176
14	0 41 44.81	2.1355	1 4 37.3	14.483	14	2 24 33.38	2.1706	10 9 44.5	13.117
15	0 43 52.92	2.1348	0 50 8.2	14.486	15	2 26 43.67	2.1726	10 22 49.8	13.057
16	0 46 0.99	2.1342	0 35 39.0	14.487	16	2 28 54.09	2.1747	10 35 51.4	12.996
17	0 48 9.02	2.1336	0 21 9.8	14.486	17	2 31 4.63	2.1769	10 48 49.3	12.933
18	0 50 17.02	2.1331	S. 0 6 40.7	14.484	18	2 33 15.29	2.1788	11 1 43.4	12.870
19	0 52 24.99	2.1326	N. 0 7 48.3	14.481	19	2 35 26.09	2.1811	11 14 33.7	12.805
20	0 54 32.93	2.1322	0 22 17.0	14.477	20	2 37 37.02	2.1832	11 27 20.0	12.738
21	0 56 40.85	2.1320	0 36 45.5	14.471	21	2 39 48.08	2.1854	11 40 2.3	12.672
22	0 58 48.75	2.1316	0 51 13.5	14.463	22	2 41 59.27	2.1877	11 52 40.6	12.603
23	1 0 56.64	2.1314	1 5 41.1	14.456	23	2 44 10.61	2.1901	12 5 14.7	12.533
24	1 3 4.52	2.1313	N. 1 20 8.2	14.446	24	2 46 22.08	2.1923	N. 12 17 44.6	12.462

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SATURDAY 5.					MONDAY 7.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	2 46 22.08	2.1983	N. 12 17 44.6	12.468	0	4 34 32.54	2.3187	N. 20 32 17.2	7.744
1	2 48 33.69	2.1947	12 30 10.2	12.390	1	4 36 51.36	2.3147	20 39 58.2	7.623
2	2 50 45.45	2.1972	12 42 31.4	12.316	2	4 39 10.31	2.3167	20 47 32.0	7.502
3	2 52 57.35	2.1996	12 54 48.1	12.241	3	4 41 29.37	2.3186	20 54 58.4	7.378
4	2 55 9.40	2.2021	13 7 0.3	12.166	4	4 43 48.54	2.3205	21 2 17.4	7.255
5	2 57 21.60	2.2045	13 19 8.0	12.089	5	4 46 7.83	2.3224	21 9 29.0	7.131
6	2 59 33.94	2.2070	13 31 11.0	12.010	6	4 48 27.23	2.3242	21 16 33.1	7.006
7	3 1 46.44	2.2095	13 43 9.2	11.930	7	4 50 46.73	2.3259	21 23 29.7	6.880
8	3 3 59.08	2.2120	13 55 2.6	11.850	8	4 53 6.34	2.3276	21 30 18.7	6.754
9	3 6 11.88	2.2147	14 6 51.2	11.768	9	4 55 26.04	2.3292	21 37 0.2	6.627
10	3 8 24.84	2.2172	14 18 34.8	11.685	10	4 57 45.84	2.3308	21 43 34.0	6.500
11	3 10 37.95	2.2197	14 30 13.4	11.601	11	5 0 5.74	2.3323	21 50 0.2	6.372
12	3 12 51.21	2.2223	14 41 46.9	11.515	12	5 2 25.72	2.3337	21 56 18.7	6.243
13	3 15 4.63	2.2250	14 53 15.2	11.428	13	5 4 45.79	2.3352	22 2 29.4	6.114
14	3 17 18.21	2.2276	15 4 38.3	11.341	14	5 7 5.94	2.3365	22 8 32.4	5.985
15	3 19 31.94	2.2302	15 15 56.1	11.252	15	5 9 26.17	2.3378	22 14 27.6	5.855
16	3 21 45.83	2.2329	15 27 8.6	11.162	16	5 11 46.48	2.3391	22 20 15.0	5.724
17	3 23 59.89	2.2356	15 38 15.6	11.071	17	5 14 6.86	2.3402	22 25 54.5	5.593
18	3 26 14.10	2.2382	15 49 17.1	10.979	18	5 16 27.30	2.3412	22 31 26.2	5.462
19	3 28 28.47	2.2408	16 0 13.1	10.886	19	5 18 47.80	2.3422	22 36 50.0	5.330
20	3 30 43.00	2.2435	16 11 3.4	10.792	20	5 21 8.36	2.3432	22 42 5.8	5.197
21	3 32 57.69	2.2462	16 21 48.1	10.697	21	5 23 28.98	2.3440	22 47 13.7	5.065
22	3 35 12.54	2.2488	16 32 27.0	10.599	22	5 25 49.64	2.3447	22 52 13.6	4.932
23	3 37 27.55	2.2515	N. 16 43 0.0	10.502	23	5 28 10.35	2.3455	N. 22 57 5.6	4.799
SUNDAY 6.					TUESDAY 8.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	3 39 42.72	2.2542	N. 16 53 27.2	10.403	0	5 30 31.10	2.3468	N. 23 1 49.5	4.665
1	3 41 58.05	2.2568	17 3 48.4	10.303	1	5 32 51.89	2.3467	23 6 25.4	4.531
2	3 44 13.54	2.2594	17 14 3.6	10.202	2	5 35 12.71	2.3472	23 10 53.2	4.397
3	3 46 29.18	2.2621	17 24 12.7	10.101	3	5 37 33.55	2.3476	23 15 13.0	4.262
4	3 48 44.99	2.2647	17 34 15.7	9.998	4	5 39 54.42	2.3480	23 19 24.7	4.127
5	3 51 0.95	2.2673	17 44 12.5	9.894	5	5 42 15.31	2.3482	23 23 28.3	3.992
6	3 53 17.07	2.2699	17 54 3.0	9.789	6	5 44 36.20	2.3483	23 27 23.8	3.857
7	3 55 33.34	2.2725	18 3 47.2	9.683	7	5 46 57.11	2.3486	23 31 11.2	3.722
8	3 57 49.77	2.2751	18 13 25.0	9.577	8	5 49 18.03	2.3486	23 34 50.5	3.587
9	4 0 6.35	2.2777	18 22 56.4	9.469	9	5 51 38.94	2.3484	23 38 21.7	3.452
10	4 2 23.09	2.2802	18 32 21.3	9.361	10	5 53 59.84	2.3483	23 41 44.7	3.315
11	4 4 39.97	2.2827	18 41 39.7	9.251	11	5 56 20.74	2.3482	23 44 59.5	3.179
12	4 6 57.01	2.2852	18 50 51.4	9.140	12	5 58 41.62	2.3478	23 48 6.2	3.043
13	4 9 14.20	2.2877	18 59 56.5	9.028	13	6 1 2.48	2.3474	23 51 4.7	2.907
14	4 11 31.53	2.2901	19 8 54.8	8.915	14	6 3 23.31	2.3470	23 53 55.1	2.772
15	4 13 49.01	2.2925	19 17 46.3	8.802	15	6 5 44.12	2.3465	23 56 37.4	2.637
16	4 16 6.63	2.2949	19 26 31.1	8.689	16	6 8 4.89	2.3458	23 59 11.5	2.500
17	4 18 24.40	2.2972	19 35 9.0	8.573	17	6 10 25.62	2.3451	24 1 37.4	2.363
18	4 20 42.30	2.2995	19 43 39.9	8.457	18	6 12 46.30	2.3443	24 3 55.1	2.227
19	4 23 0.34	2.3018	19 52 3.8	8.340	19	6 15 6.94	2.3435	24 6 4.7	2.092
20	4 25 18.52	2.3041	20 0 20.7	8.223	20	6 17 27.52	2.3425	24 8 6.1	1.956
21	4 27 36.83	2.3062	20 8 30.6	8.105	21	6 19 48.04	2.3414	24 9 59.4	1.821
22	4 29 55.27	2.3084	20 16 33.3	7.986	22	6 22 8.49	2.3403	24 11 44.6	1.685
23	4 32 13.84	2.3106	20 24 28.9	7.866	23	6 24 28.88	2.3392	24 13 21.6	1.549
24	4 34 32.54	2.3127	N. 20 32 17.2	7.744	24	6 26 49.19	2.3378	N. 24 14 50.5	1.414

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 9.					FRIDAY 11.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	6 26 49.19	2.3378	N.24 14 50.5	1.414	0	8 16 8.86	2.1937	N.22 54 0.8	4.568
1	6 29 9.42	2.3365	24 16 11.3	1.279	1	8 18 20.36	2.1895	22 49 23.4	4.678
2	6 31 29.57	2.3351	24 17 24.0	1.144	2	8 20 31.60	2.1852	22 44 39.5	4.786
3	6 33 49.63	2.3335	24 18 28.6	1.009	3	8 22 42.59	2.1810	22 39 49.1	4.892
4	6 36 9.59	2.3319	24 19 25.1	0.875	4	8 24 53.32	2.1766	22 34 52.4	4.998
5	6 38 29.46	2.3302	24 20 13.6	0.741	5	8 27 3.78	2.1722	22 29 49.3	5.105
6	6 40 49.22	2.3284	24 20 54.0	0.607	6	8 29 13.99	2.1679	22 24 39.8	5.210
7	6 43 8.87	2.3265	24 21 26.4	0.472	7	8 31 23.93	2.1635	22 19 24.1	5.313
8	6 45 28.40	2.3246	24 21 50.7	0.339	8	8 33 33.61	2.1591	22 14 2.2	5.416
9	6 47 47.82	2.3227	24 22 7.1	0.207	9	8 35 43.02	2.1547	22 8 34.2	5.518
10	6 50 7.12	2.3206	24 22 15.6	+0.075	10	8 37 52.17	2.1502	22 3 0.0	5.621
11	6 52 26.29	2.3184	24 22 16.1	-0.058	11	8 40 1.05	2.1457	21 57 19.7	5.721
12	6 54 45.33	2.3162	24 22 8.6	0.191	12	8 42 9.66	2.1412	21 51 33.5	5.820
13	6 57 4.23	2.3138	24 21 53.2	0.322	13	8 44 18.00	2.1368	21 45 41.3	5.919
14	6 59 22.99	2.3114	24 21 30.0	0.452	14	8 46 26.08	2.1323	21 39 43.2	6.017
15	7 1 41.60	2.3090	24 20 58.9	0.583	15	8 48 33.88	2.1278	21 33 39.2	6.115
16	7 4 0.07	2.3065	24 20 20.0	0.713	16	8 50 41.42	2.1234	21 27 29.4	6.212
17	7 6 18.38	2.3038	24 19 33.3	0.843	17	8 52 48.69	2.1188	21 21 13.8	6.307
18	7 8 36.53	2.3012	24 18 38.8	0.973	18	8 54 55.68	2.1143	21 14 52.5	6.402
19	7 10 54.52	2.2984	24 17 36.5	1.102	19	8 57 2.41	2.1098	21 8 25.5	6.497
20	7 13 12.34	2.2956	24 16 26.6	1.230	20	8 59 8.86	2.1052	21 1 52.9	6.589
21	7 15 29.99	2.2927	24 15 8.9	1.358	21	9 1 15.04	2.1007	20 55 14.8	6.682
22	7 17 47.46	2.2897	24 13 43.7	1.484	22	9 3 20.95	2.0963	20 48 31.1	6.773
23	7 20 4.76	2.2867	N.24 12 10.8	1.612	23	9 5 26.60	2.0918	N.20 41 42.0	6.864
THURSDAY 10.					SATURDAY 12.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	7 22 21.87	2.2837	N.24 10 30.3	1.737	0	9 7 31.97	2.0872	N.20 34 47.4	6.954
1	7 24 38.80	2.2805	24 8 42.3	1.863	1	9 9 37.07	2.0828	20 27 47.5	7.042
2	7 26 55.53	2.2773	24 6 46.7	1.988	2	9 11 41.91	2.0783	20 20 42.3	7.131
3	7 29 12.07	2.2741	24 4 43.7	2.112	3	9 13 46.47	2.0738	20 13 31.8	7.218
4	7 31 28.42	2.2707	24 2 33.2	2.237	4	9 15 50.77	2.0694	20 6 16.1	7.304
5	7 33 44.56	2.2672	24 0 15.3	2.360	5	9 17 54.80	2.0649	19 58 55.3	7.390
6	7 36 0.49	2.2638	23 57 50.0	2.482	6	9 19 58.56	2.0605	19 51 29.3	7.475
7	7 38 16.22	2.2604	23 55 17.4	2.605	7	9 22 2.06	2.0561	19 43 58.3	7.559
8	7 40 31.74	2.2568	23 52 37.4	2.727	8	9 24 5.29	2.0517	19 36 22.2	7.642
9	7 42 47.04	2.2532	23 49 50.2	2.847	9	9 26 8.26	2.0472	19 28 41.2	7.725
10	7 45 2.12	2.2495	23 46 55.8	2.966	10	9 28 10.96	2.0428	19 20 55.2	7.807
11	7 47 16.98	2.2458	23 43 54.3	3.085	11	9 30 13.40	2.0385	19 13 4.4	7.887
12	7 49 31.62	2.2421	23 40 45.6	3.204	12	9 32 15.58	2.0342	19 5 8.8	7.967
13	7 51 46.03	2.2382	23 37 29.8	3.322	13	9 34 17.50	2.0299	18 57 8.4	8.046
14	7 54 0.21	2.2344	23 34 7.0	3.439	14	9 36 19.17	2.0256	18 49 3.3	8.124
15	7 56 14.16	2.2306	23 30 37.1	3.556	15	9 38 20.57	2.0213	18 40 53.5	8.202
16	7 58 27.88	2.2266	23 27 0.3	3.671	16	9 40 21.72	2.0171	18 32 39.1	8.277
17	8 0 41.35	2.2226	23 23 16.6	3.786	17	9 42 22.62	2.0129	18 24 20.2	8.353
18	8 2 54.59	2.2187	23 19 26.0	3.900	18	9 44 23.27	2.0087	18 15 56.7	8.429
19	8 5 7.59	2.2146	23 15 28.6	4.013	19	9 46 23.66	2.0044	18 7 28.7	8.503
20	8 7 20.34	2.2104	23 11 24.4	4.126	20	9 48 23.80	2.0003	17 58 56.3	8.577
21	8 9 32.84	2.2063	23 7 13.5	4.237	21	9 50 23.70	1.9962	17 50 19.5	8.650
22	8 11 45.10	2.2022	23 2 55.9	4.349	22	9 52 23.35	1.9922	17 41 38.3	8.722
23	8 13 57.11	2.1980	22 58 31.6	4.459	23	9 54 22.76	1.9881	17 32 52.9	8.792
24	8 16 8.86	2.1937	N.22 54 0.8	4.568	24	9 56 21.92	1.9840	N.17 24 3.2	8.863

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 13.					TUESDAY 15.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	9 56 21.92	1.9840	N. 17 24 3.2	8.863	0	11 27 46.15	1.8435	N. 9 11 26.1	11.401
1	9 58 20.84	1.9801	17 15 9.3	8.932	1	11 29 36.71	1.8419	9 0 0.9	11.437
2	10 0 19.53	1.9762	17 6 11.3	9.001	2	11 31 27.18	1.8403	8 48 33.6	11.473
3	10 2 17.98	1.9722	16 57 9.2	9.069	3	11 33 17.55	1.8388	8 37 4.1	11.509
4	10 4 16.19	1.9683	16 48 3.0	9.137	4	11 35 7.84	1.8375	8 25 32.5	11.544
5	10 6 14.18	1.9645	16 38 52.8	9.203	5	11 36 58.05	1.8361	8 13 58.8	11.578
6	10 8 11.93	1.9607	16 29 38.6	9.269	6	11 38 48.17	1.8347	8 2 23.1	11.612
7	10 10 9.46	1.9569	16 20 20.5	9.334	7	11 40 38.21	1.8335	7 50 45.3	11.646
8	10 12 6.76	1.9532	16 10 58.5	9.398	8	11 42 28.19	1.8323	7 39 5.6	11.678
9	10 14 3.84	1.9495	16 1 32.7	9.462	9	11 44 18.09	1.8312	7 27 23.9	11.711
10	10 16 0.70	1.9458	15 52 3.1	9.524	10	11 46 7.93	1.8301	7 15 40.3	11.742
11	10 17 57.34	1.9422	15 42 29.8	9.587	11	11 47 57.70	1.8291	7 3 54.9	11.772
12	10 19 53.77	1.9387	15 32 52.7	9.648	12	11 49 47.42	1.8282	6 52 7.6	11.803
13	10 21 49.98	1.9352	15 23 12.0	9.708	13	11 51 37.08	1.8273	6 40 18.5	11.832
14	10 23 45.99	1.9317	15 13 27.7	9.768	14	11 53 26.70	1.8266	6 28 27.7	11.862
15	10 25 41.78	1.9282	15 3 39.8	9.827	15	11 55 16.27	1.8258	6 16 35.1	11.890
16	10 27 37.37	1.9248	14 53 48.4	9.886	16	11 57 5.79	1.8251	6 4 40.9	11.917
17	10 29 32.76	1.9215	14 43 53.5	9.943	17	11 58 55.28	1.8245	5 52 45.0	11.945
18	10 31 27.95	1.9182	14 33 55.2	10.001	18	12 0 44.73	1.8239	5 40 47.5	11.972
19	10 33 22.95	1.9150	14 23 53.4	10.057	19	12 2 34.15	1.8234	5 28 48.4	11.998
20	10 35 17.75	1.9117	14 13 48.3	10.112	20	12 4 23.54	1.8230	5 16 47.7	12.024
21	10 37 12.36	1.9086	14 3 39.9	10.167	21	12 6 12.91	1.8227	5 4 45.5	12.048
22	10 39 6.78	1.9055	13 53 28.2	10.222	22	12 8 2.26	1.8222	4 52 41.9	12.072
23	10 41 1.02	1.9025	N. 13 43 13.2	10.276	23	12 9 51.60	1.8222	N. 4 40 36.9	12.096
MONDAY 14.					WEDNESDAY 16.				
0	10 42 55.08	1.8995	N. 13 32 55.1	10.327	0	12 11 40.93	1.8221	N. 4 28 30.4	12.119
1	10 44 48.96	1.8965	13 22 33.9	10.380	1	12 13 30.25	1.8219	4 16 22.6	12.142
2	10 46 42.66	1.8936	13 12 9.5	10.432	2	12 15 19.56	1.8219	4 4 13.4	12.164
3	10 48 36.19	1.8907	13 1 42.0	10.482	3	12 17 8.88	1.8221	3 52 2.9	12.185
4	10 50 29.55	1.8879	12 51 11.6	10.532	4	12 18 58.21	1.8222	3 39 51.2	12.206
5	10 52 22.74	1.8852	12 40 38.1	10.582	5	12 20 47.54	1.8222	3 27 38.2	12.226
6	10 54 15.77	1.8826	12 30 1.7	10.631	6	12 22 36.88	1.8225	3 15 24.1	12.245
7	10 56 8.65	1.8799	12 19 22.4	10.679	7	12 24 26.24	1.8228	3 3 8.8	12.264
8	10 58 1.36	1.8772	12 8 40.2	10.727	8	12 26 15.62	1.8232	2 50 52.4	12.282
9	10 59 53.92	1.8747	11 57 55.2	10.773	9	12 28 5.03	1.8237	2 38 34.9	12.301
10	11 1 46.33	1.8722	11 47 7.4	10.820	10	12 29 54.46	1.8242	2 26 16.3	12.317
11	11 3 38.59	1.8698	11 36 16.8	10.866	11	12 31 43.93	1.8248	2 13 56.8	12.333
12	11 5 30.71	1.8675	11 25 23.5	10.911	12	12 33 33.44	1.8255	2 1 36.3	12.349
13	11 7 22.69	1.8652	11 14 27.5	10.955	13	12 35 22.99	1.8262	1 49 14.9	12.364
14	11 9 14.53	1.8629	11 3 28.9	10.998	14	12 37 12.58	1.8269	1 36 52.6	12.379
15	11 11 6.24	1.8607	10 52 27.7	11.041	15	12 39 2.22	1.8277	1 24 29.4	12.393
16	11 12 57.82	1.8586	10 41 24.0	11.083	16	12 40 51.91	1.8287	1 12 5.4	12.407
17	11 14 49.27	1.8564	10 30 17.7	11.126	17	12 42 41.66	1.8297	0 59 40.6	12.419
18	11 16 40.59	1.8544	10 19 8.9	11.167	18	12 44 31.48	1.8308	0 47 15.1	12.432
19	11 18 31.80	1.8525	10 7 57.7	11.207	19	12 46 21.36	1.8319	0 34 48.8	12.443
20	11 20 22.89	1.8505	9 56 44.0	11.247	20	12 48 11.31	1.8332	0 22 21.9	12.453
21	11 22 13.86	1.8487	9 45 28.0	11.286	21	12 50 1.34	1.8344	N. 0 9 54.4	12.463
22	11 24 4.73	1.8469	9 34 9.7	11.325	22	12 51 51.44	1.8357	S. 0 2 33.7	12.473
23	11 25 55.49	1.8452	9 22 49.0	11.363	23	12 53 41.63	1.8372	0 15 2.4	12.482
24	11 27 46.15	1.8435	N. 9 11 26.1	11.401	24	12 55 31.90	1.8386	S. 0 27 31.5	12.489

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
THURSDAY 17.					SATURDAY 19.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	12 55 31.90	1.8386	S. 0 27 31.5	12.489	0	14 26 49.69	1.9922	S. 10 22 25.7	11.980
1	12 57 22.26	1.8402	0 40 1.1	12.497	1	14 28 49.37	1.9971	10 34 23.5	11.947
2	12 59 12.72	1.8418	0 52 31.2	12.504	2	14 30 49.34	2.0020	10 46 19.3	11.913
3	13 1 3.28	1.8436	1 5 1.6	12.510	3	14 32 49.61	2.0070	10 58 13.1	11.879
4	13 2 53.95	1.8453	1 17 32.4	12.516	4	14 34 50.18	2.0121	11 10 4.8	11.843
5	13 4 44.72	1.8471	1 30 3.5	12.520	5	14 36 51.06	2.0172	11 21 54.3	11.806
6	13 6 35.60	1.8490	1 42 34.8	12.524	6	14 38 52.25	2.0224	11 33 41.5	11.767
7	13 8 26.60	1.8510	1 55 6.4	12.528	7	14 40 53.75	2.0277	11 45 26.4	11.728
8	13 10 17.72	1.8530	2 7 38.2	12.531	8	14 42 55.57	2.0330	11 57 8.9	11.688
9	13 12 8.96	1.8551	2 20 10.1	12.532	9	14 44 57.71	2.0383	12 8 49.0	11.647
10	13 14 0.33	1.8573	2 32 42.1	12.533	10	14 47 0.17	2.0437	12 20 26.5	11.603
11	13 15 51.84	1.8596	2 45 14.1	12.534	11	14 49 2.96	2.0492	12 32 1.4	11.560
12	13 17 43.48	1.8618	2 57 46.2	12.534	12	14 51 6.08	2.0548	12 43 33.7	11.515
13	13 19 35.26	1.8642	3 10 18.2	12.533	13	14 53 9.54	2.0604	12 55 3.2	11.468
14	13 21 27.19	1.8667	3 22 50.2	12.532	14	14 55 13.33	2.0661	13 6 29.9	11.422
15	13 23 19.27	1.8693	3 35 22.0	12.529	15	14 57 17.47	2.0718	13 17 53.8	11.373
16	13 25 11.51	1.8719	3 47 53.7	12.527	16	14 59 21.95	2.0776	13 29 14.7	11.322
17	13 27 3.90	1.8746	4 0 25.2	12.522	17	15 1 26.78	2.0834	13 40 32.5	11.272
18	13 28 56.46	1.8773	4 12 56.4	12.517	18	15 3 31.96	2.0892	13 51 47.3	11.220
19	13 30 49.18	1.8801	4 25 27.3	12.512	19	15 5 37.49	2.0952	14 2 58.9	11.166
20	13 32 42.07	1.8830	4 37 57.8	12.506	20	15 7 43.38	2.1012	14 14 7.2	11.112
21	13 34 35.14	1.8860	4 50 28.0	12.499	21	15 9 49.63	2.1072	14 25 12.3	11.056
22	13 36 28.39	1.8890	5 2 57.7	12.491	22	15 11 56.25	2.1133	14 36 13.9	11.008
23	13 38 21.82	1.8921	S. 5 15 26.9	12.482	23	15 14 3.23	2.1194	S. 14 47 12.1	10.940
FRIDAY 18.					SUNDAY 20.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	13 40 15.44	1.8953	S. 5 27 55.5	12.472	0	15 16 10.58	2.1256	S. 14 58 6.7	10.880
1	13 42 9.26	1.8986	5 40 23.6	12.462	1	15 18 18.30	2.1318	15 8 57.7	10.818
2	13 44 3.27	1.9018	5 52 51.0	12.451	2	15 20 26.40	2.1381	15 19 44.9	10.756
3	13 45 57.48	1.9052	6 5 17.7	12.439	3	15 22 34.87	2.1443	15 30 28.4	10.692
4	13 47 51.89	1.9087	6 17 43.7	12.427	4	15 24 43.74	2.1507	15 41 8.0	10.627
5	13 49 46.52	1.9122	6 30 8.9	12.413	5	15 26 52.95	2.1571	15 51 43.7	10.561
6	13 51 41.36	1.9157	6 42 33.2	12.398	6	15 29 2.57	2.1635	16 2 15.3	10.492
7	13 53 36.41	1.9194	6 54 56.7	12.384	7	15 31 12.57	2.1699	16 12 42.8	10.423
8	13 55 31.69	1.9232	7 7 19.3	12.368	8	15 33 22.96	2.1765	16 23 6.1	10.353
9	13 57 27.20	1.9270	7 19 40.8	12.350	9	15 35 33.75	2.1830	16 33 25.2	10.282
10	13 59 22.93	1.9308	7 32 1.3	12.332	10	15 37 44.92	2.1895	16 43 39.9	10.208
11	14 1 18.90	1.9348	7 44 20.6	12.312	11	15 39 56.49	2.1962	16 53 50.2	10.133
12	14 3 15.11	1.9388	7 56 38.8	12.293	12	15 42 8.46	2.2027	17 3 55.9	10.057
13	14 5 11.56	1.9429	8 8 55.8	12.272	13	15 44 20.82	2.2094	17 13 57.0	9.979
14	14 7 8.26	1.9471	8 21 11.5	12.250	14	15 46 33.59	2.2162	17 23 53.4	9.900
15	14 9 5.21	1.9512	8 33 25.8	12.227	15	15 48 46.76	2.2228	17 33 45.0	9.820
16	14 11 2.41	1.9555	8 45 38.8	12.205	16	15 51 0.33	2.2295	17 43 31.8	9.738
17	14 12 59.87	1.9599	8 57 50.4	12.180	17	15 53 14.30	2.2362	17 53 13.6	9.655
18	14 14 57.60	1.9643	9 10 0.4	12.154	18	15 55 28.68	2.2430	18 2 50.4	9.570
19	14 16 55.59	1.9687	9 22 8.9	12.127	19	15 57 43.46	2.2497	18 12 22.0	9.483
20	14 18 53.85	1.9733	9 34 15.7	12.100	20	15 59 58.65	2.2566	18 21 48.4	9.396
21	14 20 52.39	1.9779	9 46 20.9	12.072	21	16 2 14.25	2.2633	18 31 9.5	9.307
22	14 22 51.20	1.9826	9 58 24.3	12.042	22	16 4 30.25	2.2702	18 40 25.2	9.216
23	14 24 50.30	1.9874	10 10 25.9	12.012	23	16 6 46.67	2.2770	18 49 35.4	9.124
24	14 26 49.69	1.9922	S. 10 22 25.7	11.980	24	16 9 3.49	2.2837	S. 18 58 40.1	9.031

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
MONDAY 21.					WEDNESDAY 23.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	16 9 3.49	2.2837	S. 18 58 40.1	9.031	0	18 6 3.68	2.5687	S. 23 56 41.2	2.867
1	16 11 20.72	2.2907	19 7 39.1	8.936	1	18 8 37.92	2.5726	23 59 28.5	2.709
2	16 13 38.37	2.2975	19 16 32.4	8.839	2	18 11 12.39	2.5763	24 2 6.3	2.550
3	16 15 56.42	2.3042	19 25 19.8	8.741	3	18 13 47.08	2.5800	24 4 34.5	2.390
4	16 18 14.88	2.3112	19 34 1.3	8.642	4	18 16 21.99	2.5836	24 6 53.1	2.229
5	16 20 33.76	2.3180	19 42 36.8	8.540	5	18 18 57.11	2.5871	24 9 2.0	2.067
6	16 22 53.04	2.3247	19 51 6.1	8.437	6	18 21 32.44	2.5903	24 11 1.2	1.905
7	16 25 12.73	2.3316	19 59 29.3	8.334	7	18 24 7.95	2.5934	24 12 50.6	1.742
8	16 27 32.83	2.3383	20 7 46.2	8.228	8	18 26 43.65	2.5965	24 14 30.2	1.578
9	16 29 53.33	2.3451	20 15 56.7	8.122	9	18 29 19.53	2.5994	24 16 0.0	1.414
10	16 32 14.24	2.3519	20 24 0.8	8.013	10	18 31 55.58	2.6022	24 17 19.9	1.249
11	16 34 35.56	2.3587	20 31 58.3	7.908	11	18 34 31.79	2.6047	24 18 29.9	1.083
12	16 36 57.28	2.3653	20 39 49.1	7.791	12	18 37 8.15	2.6072	24 19 29.9	0.917
13	16 39 19.40	2.3721	20 47 33.2	7.678	13	18 39 44.66	2.6096	24 20 19.9	0.751
14	16 41 41.93	2.3787	20 55 10.5	7.564	14	18 42 21.30	2.6117	24 21 0.0	0.584
15	16 44 4.85	2.3853	21 2 40.9	7.448	15	18 44 58.06	2.6137	24 21 30.0	0.416
16	16 46 28.17	2.3919	21 10 4.3	7.331	16	18 47 34.94	2.6156	24 21 49.9	0.247
17	16 48 51.88	2.3985	21 17 20.6	7.212	17	18 50 11.93	2.6174	24 21 59.7	-0.079
18	16 51 15.99	2.4051	21 24 29.7	7.092	18	18 52 49.03	2.6190	24 21 59.4	+0.089
19	16 53 40.49	2.4115	21 31 31.6	6.970	19	18 55 26.21	2.6205	24 21 49.0	0.258
20	16 56 5.37	2.4179	21 38 26.1	6.847	20	18 58 3.47	2.6217	24 21 28.4	0.427
21	16 58 30.64	2.4243	21 45 13.2	6.722	21	19 0 40.81	2.6228	24 20 57.7	0.597
22	17 0 56.29	2.4307	21 51 52.8	6.597	22	19 3 18.21	2.6238	24 20 16.8	0.766
23	17 3 22.32	2.4370	S. 21 58 24.8	6.469	23	19 5 55.67	2.6247	S. 24 19 25.8	0.936
TUESDAY 22.					THURSDAY 24.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	17 5 48.73	2.4432	S. 22 4 49.1	6.340	0	19 8 33.17	2.6253	S. 24 18 24.5	1.107
1	17 8 15.51	2.4494	22 11 5.6	6.210	1	19 11 10.71	2.6259	24 17 13.0	1.276
2	17 10 42.66	2.4555	22 17 14.3	6.078	2	19 13 48.28	2.6263	24 15 51.4	1.445
3	17 13 10.17	2.4615	22 23 15.0	5.946	3	19 16 25.87	2.6266	24 14 19.6	1.616
4	17 15 38.04	2.4675	22 29 7.8	5.812	4	19 19 3.47	2.6267	24 12 37.5	1.786
5	17 18 6.27	2.4735	22 34 52.4	5.675	5	19 21 41.07	2.6267	24 10 45.3	1.955
6	17 20 34.86	2.4793	22 40 28.8	5.538	6	19 24 18.67	2.6265	24 8 42.9	2.125
7	17 23 3.79	2.4850	22 45 57.0	5.400	7	19 26 56.25	2.6261	24 6 30.3	2.294
8	17 25 33.06	2.4907	22 51 16.8	5.260	8	19 29 33.80	2.6256	24 4 7.6	2.463
9	17 28 2.67	2.4963	22 56 28.2	5.120	9	19 32 11.32	2.6250	24 1 34.7	2.632
10	17 30 32.62	2.5018	23 1 31.2	4.978	10	19 34 48.80	2.6242	23 58 51.7	2.801
11	17 33 2.89	2.5073	23 6 25.6	4.834	11	19 37 26.22	2.6232	23 55 58.6	2.969
12	17 35 33.49	2.5127	23 11 11.3	4.689	12	19 40 3.59	2.6222	23 52 55.4	3.137
13	17 38 4.41	2.5178	23 15 48.3	4.544	13	19 42 40.89	2.6210	23 49 42.1	3.305
14	17 40 35.63	2.5229	23 20 16.6	4.397	14	19 45 18.11	2.6197	23 46 18.8	3.472
15	17 43 7.16	2.5281	23 24 36.0	4.248	15	19 47 55.25	2.6182	23 42 45.4	3.639
16	17 45 39.00	2.5330	23 28 46.4	4.099	16	19 50 32.29	2.6165	23 39 2.1	3.805
17	17 48 11.12	2.5378	23 32 47.9	3.949	17	19 53 9.23	2.6147	23 35 8.8	3.972
18	17 50 43.53	2.5426	23 36 40.3	3.797	18	19 55 46.06	2.6129	23 31 5.5	4.137
19	17 53 16.23	2.5472	23 40 23.6	3.645	19	19 58 22.78	2.6109	23 26 52.4	4.301
20	17 55 49.20	2.5517	23 43 57.7	3.492	20	20 0 59.37	2.6087	23 22 29.4	4.464
21	17 58 22.43	2.5561	23 47 22.6	3.337	21	20 3 35.82	2.6064	23 17 56.7	4.628
22	18 0 55.93	2.5604	23 50 38.2	3.182	22	20 6 12.14	2.6041	23 13 14.1	4.791
23	18 3 29.68	2.5646	23 53 44.4	3.025	23	20 8 48.31	2.6016	23 8 21.8	4.952
24	18 6 3.68	2.5687	S. 23 56 41.2	2.867	24	20 11 24.33	2.5989	S. 23 3 19.9	5.112

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 25.					SUNDAY 27.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	20 11 24.33	2.5989	S. 23 3 19.9	5.112	0	22 11 24.96	2.3808	S. 16 13 50.2	11.426
1	20 14 0.18	2.5961	22 58 8.3	5.273	1	22 13 47.65	2.3755	16 2 21.8	11.531
2	20 16 35.86	2.5932	22 52 47.1	5.432	2	22 16 10.02	2.3702	15 50 47.7	11.615
3	20 19 11.37	2.5902	22 47 16.4	5.590	3	22 18 32.08	2.3650	15 39 8.0	11.707
4	20 21 46.69	2.5871	22 41 36.3	5.747	4	22 20 53.82	2.3597	15 27 22.9	11.797
5	20 24 21.82	2.5839	22 35 46.7	5.904	5	22 23 15.25	2.3545	15 15 32.4	11.887
6	20 26 56.76	2.5806	22 29 47.8	6.060	6	22 25 36.36	2.3492	15 3 36.5	11.974
7	20 29 31.49	2.5771	22 23 39.5	6.215	7	22 27 57.16	2.3440	14 51 35.5	12.060
8	20 32 6.01	2.5736	22 17 22.0	6.368	8	22 30 17.64	2.3388	14 39 29.3	12.145
9	20 34 40.32	2.5700	22 10 55.4	6.520	9	22 32 37.82	2.3337	14 27 18.1	12.227
10	20 37 14.41	2.5662	22 4 19.6	6.672	10	22 34 57.69	2.3287	14 15 2.0	12.308
11	20 39 48.27	2.5624	21 57 34.8	6.822	11	22 37 17.26	2.3236	14 2 41.1	12.387
12	20 42 21.90	2.5585	21 50 41.0	6.971	12	22 39 36.52	2.3185	13 50 15.5	12.465
13	20 44 55.29	2.5544	21 43 38.3	7.119	13	22 41 55.48	2.3135	13 37 45.3	12.541
14	20 47 28.43	2.5503	21 36 26.7	7.266	14	22 44 14.14	2.3085	13 25 10.6	12.615
15	20 50 1.33	2.5462	21 29 6.4	7.411	15	22 46 32.50	2.3035	13 12 31.5	12.688
16	20 52 33.98	2.5420	21 21 37.4	7.555	16	22 48 50.56	2.2987	12 59 48.0	12.760
17	20 55 6.37	2.5376	21 13 59.8	7.698	17	22 51 8.34	2.2938	12 47 0.3	12.829
18	20 57 38.49	2.5332	21 6 13.6	7.841	18	22 53 25.82	2.2889	12 34 8.5	12.897
19	21 0 10.35	2.5287	20 58 18.9	7.982	19	22 55 43.01	2.2842	12 21 12.6	12.965
20	21 2 41.94	2.5242	20 50 15.8	8.120	20	22 57 59.92	2.2795	12 8 12.7	13.030
21	21 5 13.25	2.5196	20 42 4.5	8.257	21	23 0 16.55	2.2748	11 55 9.0	13.093
22	21 7 44.29	2.5149	20 33 44.9	8.395	22	23 2 32.90	2.2702	11 42 1.5	13.155
23	21 10 15.04	2.5102	S. 20 25 17.1	8.530	23	23 4 48.97	2.2656	S. 11 28 50.4	13.215
SATURDAY 26.					MONDAY 28.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	21 12 45.51	2.5054	S. 20 16 41.3	8.663	0	23 7 4.77	2.2611	S. 11 15 35.7	13.274
1	21 15 15.69	2.5005	20 7 57.5	8.796	1	23 9 20.30	2.2566	11 2 17.5	13.332
2	21 17 45.57	2.4956	19 59 5.8	8.927	2	23 11 35.56	2.2521	10 48 55.9	13.387
3	21 20 15.16	2.4907	19 50 6.3	9.057	3	23 13 50.55	2.2477	10 35 31.1	13.441
4	21 22 44.46	2.4857	19 40 59.0	9.185	4	23 16 5.28	2.2434	10 22 3.0	13.493
5	21 25 13.45	2.4807	19 31 44.1	9.311	5	23 18 19.76	2.2392	10 8 31.9	13.544
6	21 27 42.14	2.4756	19 22 21.7	9.436	6	23 20 33.98	2.2349	9 54 57.7	13.595
7	21 30 10.52	2.4705	19 12 51.8	9.560	7	23 22 47.95	2.2307	9 41 20.5	13.643
8	21 32 38.60	2.4654	19 3 14.5	9.682	8	23 25 1.67	2.2267	9 27 40.5	13.689
9	21 35 6.37	2.4602	18 53 30.0	9.802	9	23 27 15.15	2.2227	9 13 57.8	13.734
10	21 37 33.83	2.4550	18 43 38.2	9.922	10	23 29 28.39	2.2187	9 0 12.4	13.778
11	21 40 0.97	2.4497	18 33 39.3	10.040	11	23 31 41.39	2.2147	8 46 24.4	13.820
12	21 42 27.80	2.4445	18 23 33.4	10.156	12	23 33 54.16	2.2109	8 32 34.0	13.860
13	21 44 54.31	2.4392	18 13 20.6	10.270	13	23 36 6.70	2.2072	8 18 41.2	13.900
14	21 47 20.51	2.4340	18 3 1.0	10.382	14	23 38 19.02	2.2034	8 4 46.0	13.937
15	21 49 46.39	2.4287	17 52 34.7	10.494	15	23 40 31.11	2.1997	7 50 48.7	13.973
16	21 52 11.95	2.4233	17 42 1.7	10.605	16	23 42 42.99	2.1962	7 36 49.2	14.008
17	21 54 37.19	2.4181	17 31 22.1	10.713	17	23 44 54.66	2.1927	7 22 47.7	14.042
18	21 57 2.12	2.4127	17 20 36.1	10.819	18	23 47 6.11	2.1892	7 8 44.2	14.074
19	21 59 26.72	2.4074	17 9 43.8	10.924	19	23 49 17.36	2.1858	6 54 38.8	14.104
20	22 1 51.01	2.4022	16 58 45.2	11.027	20	23 51 28.41	2.1825	6 40 31.7	14.133
21	22 4 14.98	2.3968	16 47 40.5	11.129	21	23 53 39.26	2.1792	6 26 22.9	14.161
22	22 6 38.62	2.3914	16 36 29.7	11.230	22	23 55 49.92	2.1761	6 12 12.4	14.187
23	22 9 1.95	2.3862	16 25 12.9	11.329	23	23 58 0.39	2.1729	5 58 0.4	14.212
24	22 11 24.96	2.3808	S. 16 13 50.2	11.426	24	0 0 10.67	2.1698	S. 5 43 46.9	14.236

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 29.					THURSDAY 31.				
0	h m s	s	° ' "	"	0	h m s	s	° ' "	"
0	0 0 10.67	2.1698	S. 5 43 46.9	14.236	0	1 42 11.88	2.1086	N. 5 41 29.6	13.839
1	0 2 20.77	2.1669	5 29 32.1	14.257	1	1 44 18.41	2.1090	5 55 18.8	13.801
2	0 4 30.70	2.1641	5 15 16.0	14.278	2	1 46 24.96	2.1094	6 9 5.7	13.762
3	0 6 40.46	2.1612	5 0 58.7	14.297	3	1 48 31.54	2.1100	6 22 50.3	13.722
4	0 8 50.05	2.1585	4 46 40.3	14.315	4	1 50 38.16	2.1107	6 36 32.4	13.681
5	0 10 59.48	2.1557	4 32 20.9	14.332	5	1 52 44.82	2.1113	6 50 12.0	13.639
6	0 13 8.74	2.1531	4 18 0.5	14.347	6	1 54 51.52	2.1121	7 3 49.1	13.596
7	0 15 17.85	2.1506	4 3 39.2	14.361	7	1 56 58.27	2.1129	7 17 23.5	13.551
8	0 17 26.81	2.1482	3 49 17.2	14.373	8	1 59 5.07	2.1137	7 30 55.2	13.505
9	0 19 35.63	2.1457	3 34 54.4	14.385	9	2 1 11.92	2.1147	7 44 24.1	13.458
10	0 21 44.30	2.1433	3 20 31.0	14.394	10	2 3 18.83	2.1157	7 57 50.2	13.411
11	0 23 52.83	2.1411	3 6 7.1	14.402	11	2 5 25.80	2.1167	8 11 13.4	13.362
12	0 26 1.23	2.1389	2 51 42.7	14.410	12	2 7 32.84	2.1178	8 24 33.6	13.312
13	0 28 9.50	2.1368	2 37 17.9	14.416	13	2 9 39.94	2.1190	8 37 50.8	13.260
14	0 30 17.65	2.1348	2 22 52.8	14.420	14	2 11 47.12	2.1202	8 51 4.8	13.207
15	0 32 25.68	2.1328	2 8 27.5	14.423	15	2 13 54.37	2.1214	9 4 15.7	13.154
16	0 34 33.59	2.1309	1 54 2.0	14.426	16	2 16 1.69	2.1227	9 17 23.3	13.099
17	0 36 41.39	2.1291	1 39 36.4	14.427	17	2 18 9.10	2.1242	9 30 27.6	13.044
18	0 38 49.08	2.1273	1 25 10.8	14.426	18	2 20 16.59	2.1256	9 43 28.6	12.987
19	0 40 56.67	2.1257	1 10 45.3	14.423	19	2 22 24.17	2.1271	9 56 26.1	12.929
20	0 43 4.17	2.1242	0 56 20.0	14.421	20	2 24 31.84	2.1286	10 9 20.1	12.871
21	0 45 11.57	2.1226	0 41 54.8	14.417	21	2 26 39.60	2.1302	10 22 10.6	12.811
22	0 47 18.88	2.1212	0 27 30.0	14.411	22	2 28 47.46	2.1317	10 34 57.4	12.750
23	0 49 26.11	2.1197	S. 0 13 5.5	14.404	23	2 30 55.41	2.1334	N. 10 47 40.6	12.688
WEDNESDAY 30.					FRIDAY, JANUARY 1, 1909.				
0	0 51 33.25	2.1184	N. 0 1 18.5	14.396	0	2 33 3.47	2.1352	N. 11 0 20.0	12.625
1	0 53 40.32	2.1172	0 15 42.0	14.387	PHASES OF THE MOON.				
2	0 55 47.32	2.1161	0 30 4.9	14.376					
3	0 57 54.25	2.1150	0 44 27.1	14.363					
4	1 0 1.12	2.1140	0 58 48.5	14.351					
5	1 2 7.93	2.1131	1 13 9.2	14.337					
6	1 4 14.69	2.1122	1 27 28.9	14.321					
7	1 6 21.40	2.1114	1 41 47.7	14.304					
8	1 8 28.06	2.1107	1 56 5.4	14.286					
9	1 10 34.68	2.1100	2 10 22.0	14.267					
10	1 12 41.26	2.1094	2 24 37.5	14.247					
11	1 14 47.81	2.1089	2 38 51.7	14.225	d h m ○ Full Moon Dec. 7 9 44.1 ☾ Last Quarter 15 9 12.5 ● New Moon 22 23 49.7 ☾ First Quarter 29 17 39.9				
12	1 16 54.33	2.1085	2 53 4.5	14.202					
13	1 19 0.83	2.1082	3 7 15.9	14.178					
14	1 21 7.31	2.1078	3 21 25.9	14.154					
15	1 23 13.77	2.1076	3 35 34.4	14.127					
16	1 25 20.22	2.1074	3 49 41.2	14.100					
17	1 27 26.66	2.1073	4 3 46.4	14.072					
18	1 29 33.10	2.1073	4 17 49.8	14.042					
19	1 31 39.54	2.1074	4 31 51.4	14.011					
20	1 33 45.99	2.1075	4 45 51.1	13.978					
21	1 35 52.44	2.1076	4 59 48.8	13.945	d h ☾ Apogee Dec. 14 6.7 ☾ Perigee 26 1.4				
22	1 37 58.90	2.1078	5 13 44.5	13.911					
23	1 40 5.38	2.1082	5 27 38.1	13.876					
24	1 42 11.88	2.1086	N. 5 41 29.6	13.835					

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	III ^h	P. L. of Diff.	VI ^h	P. L. of Diff.	IX ^h	P. L. of Diff.
1	SUN	W.	97 47 44	2626	99 26 4	2627	101 4 23	2628	102 42 40	2629
	α Aquilæ	W.	56 13 11	3427	57 34 57	3384	58 57 32	3346	60 20 51	3311
	α Arietis	E.	51 42 54	2522	50 2 12	2535	48 21 47	2549	46 41 42	2565
	Aldebaran	E.	81 20 16	2312	79 34 34	2313	77 48 53	2314	76 3 14	2316
2	SUN	W.	110 53 36	2638	112 31 40	2640	114 9 41	2642	115 47 39	2644
	α Aquilæ	W.	67 26 24	3180	68 52 57	3162	70 19 51	3146	71 47 5	3131
	Fomalhaut	W.	31 44 39	3003	33 14 48	2945	34 46 10	2894	36 18 37	2849
	Aldebaran	E.	67 15 36	2325	65 30 13	2327	63 44 53	2330	61 59 37	2332
	Pollux	E.	111 26 51	2328	109 41 32	2329	107 56 14	2331	106 10 59	2333
3	SUN	W.	123 56 34	2660	125 34 8	2663	127 11 38	2667	128 49 3	2671
	α Aquilæ	W.	79 6 54	3085	80 35 22	3081	82 3 54	3078	83 32 30	3078
	Fomalhaut	W.	44 12 51	2704	45 49 25	2686	47 26 23	2671	49 3 42	2657
	Aldebaran	E.	53 14 21	2349	51 29 33	2353	49 44 51	2357	48 0 15	2362
	Pollux	E.	97 25 37	2346	95 40 44	2350	93 55 57	2353	92 11 14	2356
4	α Aquilæ	W.	90 55 20	3091	92 23 41	3098	93 51 53	3106	95 19 56	3115
	Fomalhaut	W.	57 14 0	2617	58 52 32	2612	60 31 10	2609	62 9 53	2607
	α Pegasi	W.	43 22 7	3334	44 45 39	3282	46 10 12	3235	47 35 40	3193
	SATURN	W.	25 42 18	2387	27 26 11	2390	29 10 0	2394	30 53 44	2397
	Aldebaran	E.	39 19 7	2391	37 35 19	2398	35 51 42	2405	34 8 15	2414
	Pollux	E.	83 29 5	2378	81 44 59	2383	80 1 0	2388	78 17 8	2394
5	α Aquilæ	W.	102 36 39	3185	104 3 6	3204	105 29 10	3225	106 54 50	3247
	Fomalhaut	W.	70 23 43	2610	72 2 23	2613	73 41 0	2617	75 19 32	2621
	α Pegasi	W.	54 53 30	3052	56 22 38	3034	57 52 9	3018	59 21 59	3005
	SATURN	W.	39 30 54	2422	41 13 57	2428	42 56 52	2435	44 39 37	2441
	Pollux	E.	69 39 57	2426	67 56 59	2433	66 14 12	2441	64 31 35	2448
	JUPITER	E.	120 36 14	2450	118 53 51	2457	117 11 37	2463	115 29 32	2470
6	Fomalhaut	W.	83 30 25	2652	85 8 9	2660	86 45 42	2669	88 23 4	2678
	α Pegasi	W.	66 54 29	2968	68 25 22	2965	69 56 19	2963	71 27 18	2963
	SATURN	W.	53 10 51	2480	54 52 32	2489	56 34 1	2498	58 15 17	2507
	Pollux	E.	56 1 21	2492	54 19 56	2501	52 38 44	2511	50 57 46	2522
	JUPITER	E.	107 1 40	2509	105 20 39	2517	103 39 50	2526	101 59 13	2535
7	Fomalhaut	W.	96 26 38	2731	98 2 37	2742	99 38 21	2754	101 13 49	2768
	α Pegasi	W.	79 1 42	2981	80 32 19	2987	82 2 48	2994	83 33 8	3002
	SATURN	W.	66 38 23	2556	68 18 19	2567	69 57 59	2577	71 37 25	2588
	α Arietis	W.	35 23 40	2946	36 55 0	2928	38 26 43	2913	39 58 45	2901
	Pollux	E.	42 36 41	2578	40 57 16	2591	39 18 8	2604	37 39 18	2618
	JUPITER	E.	93 39 24	2584	92 0 7	2595	90 21 5	2606	88 42 18	2616
8	Fomalhaut	W.	109 6 34	2841	110 40 9	2857	112 13 23	2874	113 46 16	2891
	α Pegasi	W.	91 1 56	3056	92 31 0	3069	93 59 48	3082	95 28 20	3096
	SATURN	W.	79 50 50	2645	81 28 43	2657	83 6 21	2669	84 43 43	2681
	α Arietis	W.	47 41 42	2877	49 14 30	2877	50 47 18	2879	52 20 4	2882
	Aldebaran	W.	15 34 55	2766	17 10 7	2759	18 45 29	2754	20 20 57	2753
	JUPITER	E.	80 32 6	2673	78 54 50	2685	77 17 50	2697	75 41 6	2709
	Spica	E.	119 18 41	2678	117 41 32	2689	116 4 37	2700	114 27 57	2711

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh	P. L. of Diff.	XVIIIh	P. L. of Diff.	XXIh	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
1	SUN W.	104 20 56	2630	105 59 10	2632	107 37 21	2634	109 15 30	2636
	α Aquilæ W.	61 44 50	2679	63 9 26	2651	64 34 36	2625	66 0 16	2601
	α Arietis E.	45 2 0	2583	43 22 42	2603	41 43 52	2626	40 5 33	2651
	Aldebaran E.	74 17 38	2317	72 32 4	2319	70 46 32	2321	69 1 3	2322
2	SUN W.	117 25 34	2647	119 3 25	2650	120 41 12	2653	122 18 55	2656
	α Aquilæ W.	73 14 37	2619	74 42 23	2608	76 10 23	2699	77 38 34	2691
	Fomalhaut W.	37 52 2	2811	39 26 16	2779	41 1 12	2750	42 36 45	2725
	Aldebaran E.	60 14 24	2335	58 29 16	2339	56 44 13	2342	54 59 14	2346
	Pollux E.	104 25 48	2335	102 40 40	2337	100 55 35	2340	99 10 34	2343
3	SUN W.	130 26 22	2675	132 3 35	2679	133 40 43	2684	135 17 44	2689
	α Aquilæ W.	85 1 7	2678	86 29 44	2679	87 58 20	2681	89 26 53	2685
	Fomalhaut W.	50 41 19	2646	52 19 11	2636	53 57 17	2628	55 35 34	2622
	Aldebaran E.	46 15 46	2367	44 31 24	2373	42 47 10	2378	41 3 4	2384
	Pollux E.	90 26 36	2360	88 42 4	2364	86 57 38	2368	85 13 18	2373
4	α Aquilæ W.	96 47 47	2626	98 15 25	2639	99 42 47	2653	101 9 52	2668
	Fomalhaut W.	63 48 39	2606	65 27 26	2606	67 6 13	2607	68 44 59	2608
	α Pegasi W.	49 1 57	2658	50 28 57	2625	51 56 36	2697	53 24 48	2673
	SATURN W.	32 37 23	2401	34 20 56	2406	36 4 22	2411	37 47 42	2416
	Aldebaran E.	32 25 0	2423	30 41 58	2433	28 59 10	2444	27 16 37	2455
	Pollux E.	76 33 24	2400	74 49 49	2406	73 6 23	2412	71 23 5	2419
5	α Aquilæ W.	108 20 5	2671	109 44 51	2697	111 9 6	2625	112 32 49	2654
	Fomalhaut W.	76 57 58	2626	78 36 17	2632	80 14 28	2638	81 52 31	2645
	α Pegasi W.	60 52 6	2694	62 22 26	2685	63 52 58	2677	65 23 40	2672
	SATURN W.	46 22 13	2448	48 4 39	2456	49 46 54	2464	51 28 58	2472
	Pollux E.	62 49 8	2456	61 6 53	2465	59 24 50	2473	57 42 59	2482
	JUPITER E.	113 47 36	2477	112 5 51	2485	110 24 16	2493	108 42 52	2501
6	Fomalhaut W.	90 0 14	2688	91 37 11	2698	93 13 54	2708	94 50 23	2719
	α Pegasi W.	72 58 17	2665	74 29 14	2667	76 0 8	2670	77 30 58	2675
	SATURN W.	59 56 21	2516	61 37 12	2526	63 17 49	2535	64 58 13	2545
	Pollux E.	49 17 3	2532	47 36 34	2543	45 56 21	2554	44 16 23	2566
	JUPITER E.	100 18 49	2545	98 38 38	2554	96 58 40	2564	95 18 55	2574
7	Fomalhaut W.	102 48 59	2782	104 23 51	2796	105 58 25	2811	107 32 39	2825
	α Pegasi W.	85 3 18	2611	86 33 16	2621	88 3 3	2631	89 32 37	2643
	SATURN W.	73 16 37	2599	74 55 33	2610	76 34 14	2621	78 12 40	2633
	α Arietis W.	41 31 3	2892	43 3 33	2885	44 36 11	2880	46 8 55	2878
	Pollux E.	36 0 46	2632	34 22 34	2646	32 44 41	2661	31 7 8	2677
	JUPITER E.	87 3 45	2627	85 25 27	2639	83 47 25	2650	82 9 38	2661
8	Fomalhaut W.	115 18 46	2909	116 50 53	2927	118 22 37	2946	119 53 57	2966
	α Pegasi W.	96 56 35	2611	98 24 31	2627	99 52 8	2643	101 19 26	2660
	SATURN W.	86 20 49	2693	87 57 38	2705	89 34 11	2718	91 10 27	2730
	α Arietis W.	53 52 46	2886	55 25 23	2890	56 57 54	2895	58 30 19	2901
	Aldebaran W.	21 56 27	2754	23 31 55	2758	25 7 18	2764	26 42 33	2770
	JUPITER E.	74 4 38	2722	72 28 27	2734	70 52 32	2746	69 16 53	2758
	Spica E.	112 51 32	2722	111 15 22	2733	109 39 26	2745	108 3 46	2757

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Noon.	P. L. of Diff.	III ^h	P. L. of Diff.	VI ^h	P. L. of Diff.	IX ^h	P. L. of Diff.
9	<i>a</i> Pegasi W.	102 46 23	3178	104 12 58	3196	105 39 12	3216	107 5 2	3236
	SATURN W.	92 46 28	2742	94 22 12	2754	95 57 40	2766	97 32 52	2779
	<i>a</i> Arietis W.	60 2 37	2908	61 34 46	2915	63 6 46	2922	64 38 37	2930
	Aldebaran W.	28 17 40	2778	29 52 37	2786	31 27 23	2795	33 1 57	2804
	JUPITER E.	67 41 30	2771	66 6 24	2783	64 31 34	2795	62 57 0	2808
	Spica E.	106 28 21	2769	104 53 12	2780	103 18 18	2792	101 43 39	2803
	MARS E.	122 58 3	2971	121 27 18	2986	119 56 48	2999	118 26 33	3012
10	SATURN W.	105 24 49	2840	106 58 25	2852	108 31 46	2864	110 4 52	2876
	<i>a</i> Arietis W.	72 15 8	2975	73 45 52	2984	75 16 24	2994	76 46 45	3004
	Aldebaran W.	40 51 41	2855	42 24 58	2866	43 58 1	2876	45 30 51	2886
	JUPITER E.	55 8 17	2871	53 35 21	2883	52 2 40	2895	50 30 15	2908
	Spica E.	93 54 15	2863	92 21 8	2875	90 48 17	2886	89 15 40	2898
	MARS E.	110 59 17	3074	109 30 35	3086	108 2 9	3098	106 33 57	3110
	VENUS E.	115 56 2	3284	114 31 32	3297	113 7 17	3310	111 43 17	3322
11	<i>a</i> Arietis W.	84 15 24	3053	85 44 31	3063	87 13 26	3073	88 42 9	3082
	Aldebaran W.	53 11 43	2937	54 43 15	2947	56 14 34	2956	57 45 42	2965
	JUPITER E.	42 52 1	2967	41 21 7	2979	39 50 29	2991	38 20 5	3002
	Spica E.	81 36 12	2953	80 5 0	2963	78 34 2	2973	77 3 16	2983
	MARS E.	99 16 33	3168	97 49 45	3178	96 23 11	3188	94 56 48	3199
	VENUS E.	104 46 50	3383	103 24 14	3394	102 1 51	3405	100 39 41	3416
12	<i>a</i> Arietis W.	96 2 52	3129	97 30 27	3138	98 57 51	3146	100 25 5	3154
	Aldebaran W.	65 18 33	3009	66 48 35	3016	68 18 28	3023	69 48 12	3030
	Pollux W.	21 21 44	3084	22 50 13	3084	24 18 42	3083	25 47 12	3082
	JUPITER E.	30 51 39	3061	29 22 41	3073	27 53 59	3086	26 25 32	3099
	Spica E.	69 32 33	3031	68 2 59	3040	66 33 37	3048	65 4 24	3056
	MARS E.	87 47 53	3246	86 22 39	3254	84 57 34	3262	83 32 39	3270
	VENUS E.	93 51 48	3466	92 30 46	3475	91 9 54	3483	89 49 11	3491
	SUN E.	126 45 41	3378	125 22 59	3387	124 0 28	3395	122 38 6	3404
13	<i>a</i> Arietis W.	107 38 46	3194	109 5 2	3202	110 31 9	3209	111 57 7	3216
	Aldebaran W.	77 14 51	3060	78 43 50	3065	80 12 43	3069	81 41 31	3072
	Pollux W.	33 9 33	3090	34 37 55	3091	36 6 15	3093	37 34 33	3095
	Spica E.	57 40 42	3092	56 12 23	3099	54 44 12	3105	53 16 8	3111
	MARS E.	76 30 7	3302	75 5 58	3307	73 41 56	3312	72 17 59	3316
	VENUS E.	83 7 41	3523	81 47 45	3530	80 27 54	3535	79 8 9	3539
	SUN E.	115 48 21	3436	114 26 46	3441	113 5 16	3446	111 43 52	3450
14	Aldebaran W.	89 4 32	3085	90 33 0	3086	92 1 27	3087	93 29 53	3087
	Pollux W.	44 55 38	3100	46 23 48	3099	47 51 59	3099	49 20 10	3094
	Spica E.	45 57 30	3136	44 30 4	3140	43 2 43	3144	41 35 27	3144
	MARS E.	65 19 14	3330	63 55 37	3331	62 32 2	3332	61 8 28	3332
	VENUS E.	72 30 24	3554	71 10 59	3554	69 51 36	3555	68 32 13	3556
	SUN E.	104 57 50	3464	103 36 46	3465	102 15 43	3466	100 54 41	3466
15	Aldebaran W.	100 52 12	3080	102 20 46	3077	103 49 23	3074	105 18 4	3072
	Pollux W.	56 41 30	3087	58 9 55	3084	59 38 24	3080	61 6 58	3076
	MARS E.	54 10 32	3326	52 46 51	3323	51 23 7	3320	49 59 19	3317
	VENUS E.	61 55 11	3545	60 35 40	3545	59 16 6	3541	57 56 28	3537
	SUN E.	94 9 20	3458	92 48 9	3455	91 26 51	3452	90 5 38	3448

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
9	<i>α</i> Pegasi W.	108 30 29	3257	109 55 31	3278	111 20 8	3300	112 44 19	3324
	SATURN W.	99 7 47	2792	100 42 26	2804	102 16 49	2815	103 50 57	2828
	<i>α</i> Arietis W.	66 10 17	2939	67 41 46	2948	69 13 5	2957	70 44 12	2966
	Aldebaran W.	34 36 20	2814	36 10 30	2824	37 44 26	2834	39 18 10	2844
	JUPITER E.	61 22 43	2821	59 48 42	2834	58 14 58	2846	56 41 30	2858
	Spica E.	100 9 15	2815	98 35 7	2827	97 1 15	2839	95 27 37	2851
	MARS E.	116 56 35	3025	115 26 53	3037	113 57 26	3049	112 28 14	3061
10	SATURN W.	111 37 42	2887	113 10 18	2898	114 42 39	2909	116 14 46	2920
	<i>α</i> Arietis W.	78 16 53	3014	79 46 49	3024	81 16 32	3033	82 46 4	3043
	Aldebaran W.	47 3 28	2897	48 35 51	2907	50 8 1	2917	51 39 58	2927
	JUPITER E.	48 58 6	2920	47 26 12	2931	45 54 33	2943	44 23 9	2955
	Spica E.	87 43 18	2909	86 11 10	2920	84 39 17	2931	83 7 38	2942
	MARS E.	105 6 0	3122	103 38 17	3134	102 10 49	3145	100 43 34	3157
	VENUS E.	110 19 31	3335	108 56 0	3347	107 32 43	3359	106 9 40	3371
11	<i>α</i> Arietis W.	90 10 41	3091	91 39 1	3101	93 7 9	3110	94 35 6	3119
	Aldebaran W.	59 16 39	2974	60 47 24	2983	62 17 58	2992	63 48 21	3001
	JUPITER E.	36 49 55	3014	35 19 59	3026	33 50 18	3037	32 20 51	3049
	Spica E.	75 32 43	2993	74 2 22	3003	72 32 14	3013	71 2 18	3022
	MARS E.	93 30 38	3209	92 4 40	3219	90 38 54	3228	89 13 18	3237
	VENUS E.	99 17 43	3427	97 55 57	3437	96 34 23	3447	95 13 0	3457
12	<i>α</i> Arietis W.	101 52 9	3163	103 19 2	3171	104 45 46	3178	106 12 21	3186
	Aldebaran W.	71 17 48	3037	72 47 15	3043	74 16 34	3049	75 45 46	3055
	Pollux W.	27 15 43	3083	28 44 13	3084	30 12 42	3086	31 41 9	3088
	JUPITER E.	24 57 20	3112	23 29 25	3127	22 1 48	3143	20 34 30	3160
	Spica E.	63 35 21	3064	62 6 28	3072	60 37 44	3079	59 9 9	3086
	MARS E.	82 7 52	3277	80 43 14	3284	79 18 45	3290	77 54 23	3296
	VENUS E.	88 28 37	3499	87 8 12	3506	85 47 54	3513	84 27 44	3519
	SUN E.	121 15 54	3411	119 53 50	3417	118 31 53	3424	117 10 3	3431
13	<i>α</i> Arietis W.	113 22 57	3223	114 48 39	3230	116 14 13	3236	117 39 39	3243
	Aldebaran W.	83 10 15	3076	84 38 54	3079	86 7 29	3081	87 36 2	3083
	Pollux W.	39 2 49	3096	40 31 3	3097	41 59 16	3098	43 27 27	3099
	Spica E.	51 48 12	3116	50 20 22	3122	48 52 39	3127	47 25 2	3131
	MARS E.	70 54 6	3320	69 30 18	3323	68 6 34	3326	66 42 53	3328
	VENUS E.	77 48 28	3543	76 28 52	3547	75 9 20	3550	73 49 51	3552
	SUN E.	110 22 32	3454	109 1 17	3457	107 40 5	3460	106 18 56	3462
14	Aldebaran W.	94 58 19	3087	96 26 45	3086	97 55 12	3084	99 23 41	3082
	Pollux W.	50 48 22	3097	52 16 35	3095	53 44 51	3093	55 13 9	3090
	Spica E.	40 8 16	3153	38 41 10	3157	37 14 9	3161	35 47 13	3166
	MARS E.	59 44 54	3332	58 21 20	3332	56 57 46	3331	55 34 10	3329
	VENUS E.	67 12 51	3555	65 53 28	3555	64 34 4	3554	63 14 39	3551
	SUN E.	99 33 39	3465	98 12 37	3464	96 51 33	3463	95 30 28	3461
15	Aldebaran W.	106 46 50	3066	108 15 41	3062	109 44 37	3057	111 13 40	3052
	Pollux W.	62 35 37	3071	64 4 22	3066	65 33 13	3060	67 2 11	3053
	MARS E.	48 35 27	3313	47 11 30	3308	45 47 28	3303	44 23 20	3297
	VENUS E.	56 36 45	3533	55 16 57	3527	53 57 3	3521	52 37 2	3515
	SUN E.	88 44 15	3443	87 22 47	3438	86 1 13	3432	84 39 33	3425

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh	P. L. of Diff.	VIh	P. L. of Diff.	IXh	P. L. of Diff.
16	Pollux	W.	68 31 18	3047	70 0 32	3040	71 29 55	3033	72 59 27	3025
	JUPITER	W.	17 10 14	3167	18 37 3	3145	20 4 18	3124	21 31 58	3105
	MARS	E.	42 59 5	3291	41 34 43	3284	40 10 13	3277	38 45 35	3270
	SUN	E.	83 17 45	3418	81 55 49	3411	80 33 45	3403	79 11 32	3394
17	Pollux	W.	80 29 47	2978	82 0 27	2968	83 31 20	2957	85 2 27	2946
	JUPITER	W.	28 55 41	3026	30 25 22	3012	31 55 20	2997	33 25 37	2983
	MARS	E.	31 40 6	3227	30 14 29	3218	28 48 41	3209	27 22 42	3200
	SUN	E.	72 17 50	3345	70 54 30	3334	69 30 58	3322	68 7 12	3309
18	Pollux	W.	92 41 43	2884	94 14 22	2871	95 47 18	2857	97 20 31	2843
	JUPITER	W.	41 1 32	2909	42 33 39	2895	44 6 4	2880	45 38 49	2865
	SUN	E.	61 4 37	3242	59 39 18	3228	58 13 43	3213	56 47 50	3198
19	Pollux	W.	105 11 14	2771	106 46 20	2756	108 21 45	2741	109 57 30	2725
	JUPITER	W.	53 27 30	2786	55 2 16	2770	56 37 23	2754	58 12 51	2738
	SUN	E.	49 33 44	3119	48 5 57	3102	46 37 50	3086	45 9 23	3069
20	JUPITER	W.	66 15 36	2656	67 53 15	2640	69 31 16	2624	71 9 39	2607
	SUN	E.	37 41 53	2983	36 11 19	2965	34 40 23	2948	33 9 6	2931
21	JUPITER	W.	79 27 9	2527	81 7 45	2512	82 48 42	2497	84 30 0	2481
	SUN	E.	25 27 14	2847	23 53 47	2831	22 20 0	2815	20 45 52	2799
25	SUN	W.	26 48 27	2506	28 29 32	2502	30 10 42	2500	31 51 55	2499
	SATURN	E.	63 37 8	2206	61 48 49	2204	60 0 27	2202	58 12 2	2201
	α Arietis	E.	96 48 41	2321	95 3 12	2318	93 17 38	2315	91 32 1	2313
26	SUN	W.	40 18 19	2498	41 59 35	2500	43 40 49	2502	45 22 0	2503
	SATURN	E.	49 9 50	2202	47 21 26	2204	45 33 5	2207	43 44 48	2210
	α Arietis	E.	82 43 38	2316	80 58 2	2319	79 12 29	2322	77 27 1	2326
27	SUN	W.	53 47 2	2520	55 27 47	2524	57 8 27	2529	58 49 0	2535
	SATURN	E.	34 44 40	2231	32 56 59	2237	31 9 26	2244	29 22 3	2251
	α Arietis	E.	68 41 27	2355	66 56 48	2364	65 12 22	2373	63 28 9	2383
	Aldebaran	E.	98 58 31	2213	97 10 23	2218	95 22 22	2222	93 34 27	2227
28	SUN	W.	67 9 46	2564	68 49 30	2571	70 29 5	2577	72 8 31	2585
	α Arietis	E.	54 51 0	2446	53 8 31	2462	51 26 25	2479	49 44 43	2497
	Aldebaran	E.	84 36 45	2254	82 49 38	2261	81 2 41	2267	79 15 53	2274
29	SUN	W.	80 23 10	2623	82 1 35	2631	83 39 48	2638	85 17 51	2646
	Aldebaran	E.	70 24 23	2309	68 38 37	2317	66 53 3	2325	65 7 39	2333
	Pollux	E.	114 35 43	2313	112 50 2	2320	111 4 32	2327	109 19 12	2334
30	SUN	W.	93 25 19	2689	95 2 14	2697	96 38 58	2705	98 15 31	2713
	Aldebaran	E.	56 23 37	2373	54 39 24	2382	52 55 24	2391	51 11 36	2399
	Pollux	E.	100 35 12	2372	98 50 57	2380	97 6 53	2387	95 23 0	2395
31	SUN	W.	106 15 24	2757	107 50 48	2766	109 26 1	2775	111 1 2	2783
	Aldebaran	E.	42 35 46	2445	40 53 15	2455	39 10 58	2465	37 28 54	2475
	Pollux	E.	86 46 24	2435	85 3 39	2443	83 21 6	2451	81 38 43	2459

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XV ^h	P. L. of Diff.	XVIII ^h	P. L. of Diff.	XXI ^h	P. L. of Diff.
		° ' "		° ' "		° ' "		° ' "	
16	Pollux W.	74 29 9	3016	75 59 2	3007	77 29 5	2998	78 59 20	2988
	JUPITER W.	23 0 2	3087	24 28 27	3070	25 57 13	3055	27 26 18	3040
	MARS E.	37 20 48	3262	35 55 52	3254	34 30 47	3245	33 5 32	3236
	SUN E.	77 49 9	3385	76 26 36	3376	75 3 52	3366	73 40 57	3356
17	Pollux W.	86 33 48	2934	88 5 24	2922	89 37 14	2910	91 9 20	2897
	JUPITER W.	34 56 12	2969	36 27 4	2954	37 58 15	2939	39 29 44	2924
	MARS E.	25 56 33	3191	24 30 12	3182	23 3 41	3172	21 36 58	3162
	SUN E.	66 43 11	3296	65 18 55	3283	63 54 25	3270	62 29 39	3256
18	Pollux W.	98 54 3	2829	100 27 53	2815	102 2 1	2801	103 36 28	2786
	JUPITER W.	47 11 53	2849	48 45 17	2834	50 19 1	2818	51 53 5	2802
	SUN E.	55 21 38	3183	53 55 8	3167	52 28 19	3151	51 1 11	3135
19	Pollux W.	111 33 36	2710	113 10 2	2695	114 46 49	2680	116 23 56	2664
	JUPITER W.	59 48 41	2722	61 24 52	2706	63 1 25	2689	64 38 20	2673
	SUN E.	43 40 35	3052	42 11 26	3035	40 41 57	3018	39 12 6	3000
20	JUPITER W.	72 48 25	2591	74 27 33	2575	76 7 3	2559	77 46 55	2543
	SUN E.	31 37 27	2914	30 5 26	2897	28 33 3	2880	27 0 19	2864
21	JUPITER W.	86 11 40	2466	87 53 41	2452	89 36 2	2438	91 18 43	2424
	SUN E.	19 11 23	2784	17 36 34	2769	16 1 25	2753	14 25 55	2738
25	SUN W.	33 33 10	2498	35 14 27	2497	36 55 44	2497	38 37 2	2497
	SATURN E.	56 23 36	2201	54 35 10	2201	52 46 44	2200	50 58 17	2201
	α Arietis E.	89 46 21	2313	88 0 40	2312	86 14 58	2313	84 29 17	2314
26	SUN W.	47 3 9	2505	48 44 14	2508	50 25 15	2512	52 6 11	2516
	SATURN E.	41 56 35	2213	40 8 27	2217	38 20 25	2221	36 32 29	2226
	α Arietis E.	75 41 39	2331	73 56 24	2336	72 11 16	2342	70 26 17	2348
27	SUN W.	60 29 25	2540	62 9 42	2546	63 49 52	2552	65 29 53	2558
	SATURN E.	27 34 52	2259	25 47 53	2268	24 1 7	2278	22 14 35	2289
	α Arietis E.	61 44 10	2394	60 0 26	2406	58 16 59	2418	56 33 50	2431
	Aldebaran E.	91 46 39	2232	89 58 59	2237	88 11 26	2242	86 24 1	2248
28	SUN W.	73 47 47	2592	75 26 53	2599	77 5 49	2607	78 44 35	2615
	α Arietis E.	48 3 26	2518	46 22 38	2540	44 42 20	2564	43 2 35	2590
	Aldebaran E.	77 29 14	2281	75 42 46	2287	73 56 28	2294	72 10 20	2302
29	SUN W.	86 55 44	2655	88 33 25	2663	90 10 54	2672	91 48 12	2680
	Aldebaran E.	63 22 27	2341	61 37 27	2349	59 52 39	2357	58 8 2	2365
	Pollux E.	107 34 2	2342	105 49 3	2350	104 4 16	2357	102 19 39	2364
30	SUN W.	99 51 53	2722	101 28 3	2731	103 4 2	2740	104 39 49	2749
	Aldebaran E.	49 28 0	2408	47 44 37	2417	46 1 27	2426	44 18 30	2436
	Pollux E.	93 39 18	2403	91 55 48	2411	90 12 29	2419	88 29 21	2427
31	SUN W.	112 35 52	2792	114 10 30	2801	115 44 57	2809	117 19 13	2818
	Aldebaran E.	35 47 5	2485	34 5 30	2496	32 24 11	2507	30 43 8	2519
	Pollux E.	79 56 33	2467	78 14 34	2475	76 32 46	2484	74 51 10	2492

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	18 9 9.65	+ 17.202	24 32 19.7	- 10.31	23 33.1	1	21 46 23.87	+ 16.392	14 56 33.1	+ 102.47	1 5.3
2	18 16 3.40	17.276	24 35 47.3	6.98	23 36.1	2	21 52 53.91	16.104	14 15 3.5	104.94	1 7.9
3	18 22 58.87	17.346	24 37 54.2	3.59	23 39.1	3	21 59 16.51	15.771	13 32 38.7	107.06	1 10.3
4	18 29 55.97	17.411	24 38 39.3	- 0.16	23 42.1	4	22 5 30.49	15.385	12 49 27.9	108.76	1 12.6
5	18 36 54.59	17.473	24 38 1.4	+ 3.32	23 45.2	5	22 11 34.49	14.937	12 5 42.1	109.97	1 14.7
6	18 43 54.62	+ 17.529	24 35 59.6	+ 6.85	23 48.3	6	22 17 27.02	+ 14.427	11 21 33.7	+ 110.64	1 16.6
7	18 50 55.94	17.581	24 32 32.3	10.42	23 51.4	7	22 23 6.39	13.840	10 37 16.9	110.65	1 18.3
8	18 57 58.46	17.628	24 27 38.9	14.04	23 54.5	8	22 28 30.74	13.175	9 53 8.2	109.95	1 19.8
9	19 5 2.04	17.670	24 21 18.2	17.69	23 57.6	9	22 33 38.09	12.421	9 9 25.6	108.46	1 20.9
10	19 12 6.59	17.708	24 13 29.3	21.38	.	10	22 38 26.25	11.576	8 26 29.0	106.11	1 21.8
11	19 19 11.99	+ 17.741	24 4 11.4	+ 25.10	0 0.8	11	22 42 52.97	+ 10.634	7 44 40.0	+ 102.81	1 22.3
12	19 26 18.12	17.769	23 53 23.7	28.87	0 3.9	12	22 46 55.89	9.592	7 4 22.0	98.50	1 22.4
13	19 33 24.85	17.791	23 41 5.2	32.67	0 7.1	13	22 50 32.63	8.453	6 25 59.4	93.19	1 22.0
14	19 40 32.06	17.809	23 27 15.4	36.49	0 10.3	14	22 53 40.87	7.218	5 49 57.2	86.81	1 21.1
15	19 47 39.61	17.820	23 11 53.6	40.34	0 13.5	15	22 56 18.39	5.894	5 16 41.0	79.36	1 19.8
16	19 54 47.37	+ 17.826	22 54 59.0	+ 44.21	0 16.7	16	22 58 23.18	+ 4.492	4 46 36.1	+ 70.88	1 17.9
17	20 1 55.20	17.825	22 36 31.4	48.10	0 19.9	17	22 59 53.54	3.028	4 20 6.4	61.44	1 15.5
18	20 9 2.93	17.818	22 16 30.1	52.01	0 23.1	18	23 0 48.20	+ 1.520	3 57 34.2	51.10	1 12.4
19	20 16 10.40	17.803	21 54 55.0	55.92	0 26.3	19	23 1 6.35	- 0.009	3 39 19.8	39.99	1 8.7
20	20 23 17.40	17.780	21 31 46.0	59.83	0 29.4	20	23 0 47.84	1.530	3 25 39.4	28.29	1 4.5
21	20 30 23.77	+ 17.749	21 7 3.0	+ 63.75	0 32.6	21	22 59 53.23	- 3.012	3 16 45.0	+ 16.19	0 59.6
22	20 37 29.28	17.709	20 40 46.3	67.66	0 35.8	22	22 58 23.84	4.422	3 12 44.4	+ 3.88	0 54.1
23	20 44 33.69	17.657	20 12 56.2	71.54	0 38.9	23	22 56 21.83	5.724	3 13 37.8	- 8.28	0 48.2
24	20 51 36.71	17.593	19 43 33.3	75.38	0 42.0	24	22 53 50.21	6.884	3 19 19.2	20.11	0 41.8
25	20 58 38.06	17.516	19 12 38.9	79.16	0 45.1	25	22 50 52.78	7.870	3 29 37.7	31.28	0 34.9
26	21 5 37.37	+ 17.424	18 40 14.2	+ 82.88	0 48.2	26	22 47 34.05	- 8.656	3 44 12.5	- 41.45	0 27.6
27	21 12 34.26	17.314	18 6 21.0	86.52	0 51.2	27	22 43 59.07	9.220	4 2 37.9	50.44	0 20.2
28	21 19 28.28	17.184	17 31 1.6	90.06	0 54.1	28	22 40 13.34	9.551	4 24 22.4	58.01	0 12.5
29	21 26 18.89	17.030	16 54 19.0	93.46	0 57.0	29	22 36 22.46	9.649	4 48 50.2	64.03	0 4.7
30	21 33 5.51	16.850	16 16 16.9	96.69	0 59.9	30	22 32 31.98	9.521	5 15 22.8	68.41	23 49.4
31	21 39 47.43	+ 16.639	15 36 59.7	+ 99.70	1 2.6	31	22 28 47.19	- 9.179	5 43 21.1	- 71.16	23 41.9
32	21 46 23.87	+ 16.392	14 56 33.1	+ 102.47	1 5.3	32	22 25 12.89	- 8.650	6 12 6.1	- 72.33	23 34.6
Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.			
	"	"	"	"	"	"	"	5th.	10th.	15th.	20th.
Semidiameter.	2.35	2.32	2.33	2.36	2.41	2.51	2.65	2.89	3.24	3.74	4.38
Hor. Parallax.	6.19	6.13	6.14	6.21	6.36	6.60	7.00	7.61	8.53	9.86	11.55

NOTE. The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	22 32 31.98	- 9.521	5 15 22.8	-68.41	23 49.4	1	23 4 47.29	+ 11.557	8 6 14.7	+ 56.44	22 27.7
2	22 28 47.19	9.179	5 43 21.1	71.16	23 41.9	2	23 9 27.98	11.831	7 42 56.9	60.02	22 28.5
3	22 25 12.89	8.650	6 12 6.1	72.33	23 34.6	3	23 14 15.08	12.091	7 18 14.3	63.52	22 29.5
4	22 21 53.29	7.959	6 41 1.6	72.07	23 27.7	4	23 19 8.28	12.340	6 52 8.7	66.93	22 30.5
5	22 18 51.88	7.138	7 9 35.2	70.53	23 21.1	5	23 24 7.34	12.579	6 24 42.2	70.27	22 31.6
6	22 16 11.45	- 6.217	7 37 18.2	-67.88	23 14.9	6	23 29 12.05	+ 12.811	5 55 56.5	+ 73.53	22 32.9
7	22 13 54.03	5.225	8 3 46.2	64.32	23 9.1	7	23 34 22.23	13.037	5 25 53.5	76.71	22 34.2
8	22 12 0.99	4.190	8 28 40.0	60.05	23 3.7	8	23 39 37.74	13.255	4 54 35.0	79.83	22 35.6
9	22 10 33.10	3.133	8 51 44.3	55.23	22 58.7	9	23 44 58.47	13.471	4 22 2.4	82.88	22 37.1
10	22 9 30.61	2.075	9 12 47.8	50.01	22 54.1	10	23 50 24.35	13.685	3 48 17.5	85.85	22 38.7
11	22 8 53.33	- 1.035	9 31 42.5	-44.52	22 50.0	11	23 55 55.33	+ 13.897	3 13 22.1	+ 88.73	22 40.3
12	22 8 40.74	- 0.020	9 48 23.5	38.88	22 46.2	12	0 1 31.40	14.109	2 37 17.6	91.56	22 42.0
13	22 8 52.09	+ 0.958	10 2 48.0	33.15	22 42.8	13	0 7 12.55	14.321	2 0 5.7	94.36	22 43.9
14	22 9 26.39	1.893	10 14 54.8	27.42	22 39.8	14	0 12 58.83	14.536	1 21 48.1	97.08	22 45.8
15	22 10 22.57	2.781	10 24 44.5	21.73	22 37.1	15	0 18 50.31	14.754	0 42 26.2	99.72	22 47.8
16	22 11 39.47	+ 3.620	10 32 18.6	-16.13	22 34.8	16	0 24 47.06	+ 14.976	0 2 2.1	+ 102.28	22 49.9
17	22 13 15.92	4.409	10 37 39.4	10.62	22 32.7	17	0 30 49.21	15.203	+ 0 39 22.7	104.77	22 52.1
18	22 15 10.71	5.149	10 40 49.3	- 5.23	22 31.0	18	0 36 56.87	15.436	1 21 46.1	107.17	22 54.3
19	22 17 22.68	5.841	10 41 51.7	+ 0.01	22 29.5	19	0 43 10.21	15.676	2 5 6.3	109.49	22 56.7
20	22 19 50.70	6.487	10 40 49.8	5.12	22 28.2	20	0 49 29.40	15.924	2 49 21.0	111.71	22 59.2
21	22 22 33.69	+ 7.089	10 37 46.9	+ 10.09	22 27.2	21	0 55 54.63	+ 16.182	+ 3 34 27.8	+ 113.84	23 1.8
22	22 25 30.63	7.650	10 32 46.4	14.92	22 26.4	22	1 2 26.11	16.445	4 20 24.3	115.85	23 4.5
23	22 28 40.56	8.172	10 25 51.6	19.62	22 25.8	23	1 9 4.05	16.719	5 7 7.5	117.73	23 7.3
24	22 32 2.58	8.658	10 17 5.8	24.18	22 25.4	24	1 15 48.69	17.003	5 54 34.3	119.48	23 10.2
25	22 35 35.87	9.111	10 6 32.1	28.61	22 25.2	25	1 22 40.26	17.296	6 42 41.2	121.07	23 13.2
26	22 39 19.65	+ 9.533	9 54 13.5	+ 32.92	22 25.2	26	1 29 38.98	+ 17.599	+ 7 31 24.2	+ 122.48	23 16.4
27	22 43 13.22	9.927	9 40 13.0	37.11	22 25.3	27	1 36 45.09	17.911	8 20 38.9	123.70	23 19.7
28	22 47 15.93	10.295	9 24 33.3	41.18	22 25.5	28	1 43 58.80	18.232	9 10 20.3	124.71	23 23.1
29	22 51 27.20	10.640	9 7 17.2	45.15	22 25.9	29	1 51 20.28	18.560	10 0 22.8	125.46	23 26.6
30	22 55 46.50	10.964	8 48 27.1	49.01	22 26.4	30	1 58 49.70	18.893	10 50 40.0	125.93	23 30.3
31	23 0 13.34	+ 11.269	8 28 5.5	+ 52.77	22 27.0	31	2 6 27.17	+ 19.230	+ 11 41 4.9	+ 126.09	23 34.2
32	23 4 47.29	+ 11.557	8 6 14.7	+ 56.44	22 27.7	32	2 14 12.75	+ 19.568	+ 12 31 29.7	+ 125.91	23 38.1
Day of the Month.						Day of the Month.					
1st. 6th. 11th. 16th. 21st. 26th. 31st.						5th. 10th. 15th. 20th. 25th. 30th.					
Semidiameter. 5.32 5.25 4.92 4.51 4.12 3.78 3.49						Semidiameter . . 3.25 3.05 2.88 2.73 2.62 2.55					
Hor. Parallax. 14.03 13.85 12.97 11.88 10.85 9.95 9.20						Hor. Parallax . . 8.56 8.03 7.58 7.20 6.91 6.71					

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign — indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	2 6 27.17	+19.230	+11 41 4.9	+126.09	23 34.2	1	6 14 16.25	+14.744	+25 28 55.9	-14.70	1 36.1
2	2 14 12.75	19.568	12 31 29.7	125.91	23 38.1	2	6 20 2.64	14.120	25 22 18.2	18.40	1 37.9
3	2 22 6.40	19.902	13 21 45.7	125.35	23 42.2	3	6 25 33.88	13.481	25 14 14.9	21.83	1 39.5
4	2 30 8.02	20.231	14 11 43.4	124.38	23 46.4	4	6 30 49.64	12.830	25 4 52.4	25.00	1 40.8
5	2 38 17.40	20.548	15 1 12.4	122.96	23 50.8	5	6 35 49.62	12.166	24 54 17.0	27.91	1 41.8
6	2 46 34.21	+20.849	+15 50 1.7	+121.06	23 55.3	6	6 40 33.50	+11.488	+24 42 34.9	-30.55	1 42.6
7	2 54 57.99	21.128	16 37 59.5	118.67	23 59.8	7	6 45 0.95	10.797	24 29 52.5	32.94	1 43.1
8	3 3 28.15	21.380	17 24 53.7	115.76	.	8	6 49 11.66	10.093	24 16 15.8	35.08	1 43.3
9	3 12 3.95	21.598	18 10 31.9	112.33	0 4.5	9	6 53 5.30	9.375	24 1 50.7	36.97	1 43.3
10	3 20 44.53	21.777	18 54 41.5	108.39	0 9.2	10	6 56 41.54	8.643	23 46 43.4	38.60	1 42.9
11	3 29 28.89	+21.912	+19 37 10.4	+103.94	0 14.1	11	7 0 0.04	+7.897	+23 30 59.8	-39.99	1 42.3
12	3 38 15.92	22.000	20 17 47.0	99.04	0 18.9	12	7 3 0.48	7.138	23 14 45.8	41.14	1 41.3
13	3 47 4.42	22.034	20 56 20.7	93.70	0 23.8	13	7 5 42.53	6.365	22 58 7.1	42.05	1 40.0
14	3 55 53.15	22.017	21 32 41.6	87.99	0 28.7	14	7 8 5.89	5.580	22 41 9.6	42.71	1 38.5
15	4 4 40.79	21.944	22 6 41.9	81.98	0 33.6	15	7 10 10.26	4.783	22 23 59.1	43.13	1 36.6
16	4 13 26.05	+21.819	+22 38 14.8	+75.74	0 38.4	16	7 11 55.38	+3.975	+22 6 41.3	-43.31	1 34.4
17	4 22 7.66	21.640	23 7 15.4	69.31	0 43.1	17	7 13 21.05	3.161	21 49 21.9	43.25	1 31.8
18	4 30 44.37	21.411	23 33 40.2	62.77	0 47.8	18	7 14 27.10	2.342	21 32 6.6	42.96	1 29.0
19	4 39 15.02	21.135	23 57 27.5	56.19	0 52.4	19	7 15 13.44	1.520	21 15 1.0	42.44	1 25.8
20	4 47 38.51	20.815	24 18 37.2	49.63	0 56.9	20	7 15 40.07	+0.700	20 58 16.8	41.69	1 22.3
21	4 55 53.83	+20.455	+24 37 10.3	+43.15	1 1.2	21	7 15 47.10	-0.113	+20 41 41.6	-40.70	1 18.5
22	5 4 0.07	20.059	24 53 9.0	36.79	1 5.3	22	7 15 34.74	-0.914	20 25 38.8	39.49	1 14.3
23	5 11 56.40	19.630	25 6 36.8	30.58	1 9.3	23	7 15 3.38	1.696	20 10 7.8	38.05	1 9.8
24	5 19 42.07	19.171	25 17 37.9	24.56	1 13.2	24	7 14 13.56	2.451	19 55 14.3	36.38	1 5.1
25	5 27 16.41	18.686	25 26 17.2	18.76	1 16.8	25	7 13 6.01	3.172	19 41 3.1	34.51	1 0.0
26	5 34 38.82	+18.178	+25 32 40.1	+13.20	1 20.2	26	7 11 41.66	-3.849	+19 27 39.4	-32.43	0 54.7
27	5 41 48.78	17.649	25 36 52.5	7.88	1 23.4	27	7 10 1.69	4.472	19 15 8.2	30.14	0 49.1
28	5 48 45.80	17.100	25 39 0.4	+2.82	1 26.4	28	7 8 7.48	5.034	19 3 34.1	27.67	0 43.2
29	5 55 29.44	16.534	25 39 10.2	-1.96	1 29.2	29	7 6 0.67	5.522	18 53 1.2	25.03	0 37.2
30	6 1 59.31	15.952	25 37 28.4	6.47	1 31.8	30	7 3 43.10	5.928	18 43 33.9	22.23	0 31.0
31	6 8 15.03	+15.355	+25 34 1.5	-10.72	1 34.1	31	7 1 16.83	-6.244	+18 35 15.6	-19.28	0 24.6
32	6 14 16.25	+14.744	+25 28 55.9	-14.70	1 36.1	32	6 58 44.13	-6.463	+18 28 9.7	-16.20	0 18.2
Day of the Month. 5th. 10th. 15th. 20th. 25th. 30th.						Day of the Month. 4th. 9th. 14th. 19th. 24th. 29th.					
Semidiameter . . . 2.52 2.55 2.65 2.82 3.07 3.39						Semidiameter . . . 3.76 4.20 4.67 5.16 5.59 5.88					
Hor. Parallax . . . 6.62 6.71 6.97 7.44 8.10 8.93						Hor. Parallax . . . 9.91 11.05 12.30 13.58 14.73 15.48					

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

JULY.							AUGUST.						
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m		
1	7 1 16.83	- 6.244	+18 35 15.6	-19.28	0 24.6	1	7 29 34.66	+16.196	+21 20 4.5	+ 0.46	22 53.4		
2	6 58 44.13	6.463	18 28 9.7	16.20	0 18.2	2	7 36 12.74	16.968	21 19 12.3	- 4.87	22 56.4		
3	6 56 7.40	6.579	18 22 18.8	13.02	0 11.7	3	7 43 8.65	17.681	21 16 7.5	10.59	22 59.6		
4	6 53 29.20	6.589	18 17 45.1	9.77	0 5.1	4	7 50 20.92	18.331	21 10 41.4	16.64	23 3.1		
5	6 50 52.09	6.487	18 14 30.3	6.47	23 52.1	5	7 57 47.98	18.911	21 2 46.8	22.96	23 6.9		
6	6 48 18.68	- 6.279	+18 12 34.9	- 3.14	23 45.7	6	8 5 28.06	+19.416	+20 52 17.8	- 29.48	23 10.8		
7	6 45 51.56	5.963	18 11 59.4	+ 0.18	23 39.5	7	8 13 19.33	19.843	20 39 10.7	36.13	23 14.8		
8	6 43 33.27	5.543	18 12 43.1	3.45	23 33.5	8	8 21 19.86	20.188	20 23 23.4	42.81	23 19.0		
9	6 41 26.15	5.032	18 14 44.7	6.67	23 27.6	9	8 29 27.69	20.451	20 4 56.0	49.46	23 23.3		
10	6 39 32.44	4.429	18 18' 2.1	9.76	23 22.1	10	8 37 40.88	20.634	19 43 50.3	55.99	23 27.7		
11	6 37 54.18	- 3.746	+18 22 32.2	+12.72	23 16.8	11	8 45 57.53	+20.741	+19 20 10.3	- 62.31	23 32.0		
12	6 36 33.19	2.991	18 28 11.5	15.52	23 11.8	12	8 54 15.86	20.775	18 54 1.5	68.38	23 36.4		
13	6 35 31.10	2.174	18 34 55.6	18.12	23 7.2	13	9 2 34.19	20.743	18 25 31.0	74.12	23 40.8		
14	6 34 49.28	1.303	18 42 39.5	20.50	23 2.9	14	9 10 51.03	20.651	17 54 46.8	79.50	23 45.1		
15	6 34 28.92	- 0.387	18 51 17.4	22.61	22 59.0	15	9 19 5.04	20.508	17 21 57.9	84.50	23 49.3		
16	6 34 30.99	+ 0.565	+19 0 42.5	+24.44	22 55.4	16	9 27 15.06	+20.321	+16 47 14.0	- 89.09	23 53.5		
17	6 34 56.26	1.545	19 10 48.3	25.99	22 52.3	17	9 35 20.14	20.097	16 10 45.0	93.26	23 57.5		
18	6 35 45.33	2.547	19 21 27.2	27.19	22 49.6	18	9 43 19.48	19.845	15 32 40.7	97.02	.		
19	6 36 58.64	3.564	19 32 30.9	28.05	22 47.3	19	9 51 12.51	19.570	14 53 11.1	100.38	0 1.5		
20	6 38 36.50	4.592	19 43 50.9	28.54	22 45.4	20	9 58 58.72	19.279	14 12 25.5	103.35	0 5.3		
21	6 40 39.08	+ 5.624	+19 55 18.4	+28.67	22 43.8	21	10 6 37.80	+18.976	+13 30 33.4	-105.96	0 9.0		
22	6 43 6.47	6.658	20 6 43.7	28.37	22 42.7	22	10 14 9.54	18.668	12 47 43.1	108.19	0 12.6		
23	6 45 58.63	7.688	20 17 57.0	27.66	22 42.1	23	10 21 33.84	18.357	12 4 2.7	110.11	0 16.1		
24	6 49 15.46	8.713	20 28 48.1	26.52	22 41.8	24	10 28 50.68	18.047	11 19 40.0	111.74	0 19.4		
25	6 52 56.75	9.727	20 39 6.3	24.92	22 41.9	25	10 36 0.10	17.739	10 34 41.6	113.08	0 22.7		
26	6 57 2.23	+10.728	+20 48 40.6	+22.86	22 42.4	26	10 43 2.20	+17.437	+ 9 49 14.1	-114.17	0 25.8		
27	7 1 31.53	11.711	20 57 19.6	20.31	22 43.4	27	10 49 57.13	17.142	9 3 23.4	115.01	0 28.7		
28	7 6 24.17	12.672	21 4 51.9	17.30	22 44.7	28	10 56 45.07	16.855	8 17 14.9	115.65	0 31.6		
29	7 11 39.56	13.606	21 11 6.3	13.80	22 46.3	29	11 3 26.23	16.576	7 30 53.5	116.10	0 34.3		
30	7 17 17.02	14.510	21 15 50.6	9.81	22 48.3	30	11 10 0.82	16.307	6 44 23.7	116.35	0 37.0		
31	7 23 15.72	+15.375	+21 18 53.7	+ 5.36	22 50.7	31	11 16 29.07	+16.049	+ 5 57 49.8	-116.45	0 39.5		
32	7 29 34.66	+16.196	+21 20 4.5	+ 0.46	22 53.4	32	11 22 51.23	+15.800	+ 5 11 15.3	-116.40	0 41.9		
Day of the Month.							Day of the Month.						
	4th.	9th.	14th.	19th.	24th.	29th.		3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter	5.90	5.64	5.15	4.56	3.98	3.48	Semidiameter	3.07	2.78	2.59	2.49	2.44	2.44
Hor. Parallax	15.56	14.86	13.56	12.01	10.49	9.16	Hor. Parallax	8.10	7.33	6.83	6.55	6.43	6.42

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	11 22 51.23	+ 15.800	+ 5 11 15.3	- 116.40	0 41.9	1	13 59 56.58	+ 10.409	- 14 55 31.8	- 72.33	1 20.7
2	11 29 7.53	15.560	4 24 43.8	116.21	0 44.3	2	14 4 2.99	10.121	15 23 52.1	69.33	1 20.8
3	11 35 18.21	15.331	3 38 18.4	115.89	0 46.5	3	14 8 2.17	9.805	15 50 58.2	66.15	1 20.9
4	11 41 23.49	15.111	2 52 2.2	115.45	0 48.6	4	14 11 53.37	9.456	16 16 45.6	62.77	1 20.8
5	11 47 23.62	14.901	2 5 57.7	114.91	0 50.7	5	14 15 35.77	9.071	16 41 9.4	59.18	1 20.5
6	11 53 18.79	+ 14.699	+ 1 20 7.5	- 114.26	0 52.7	6	14 19 8.43	+ 8.644	- 17 4 4.1	- 55.34	1 20.1
7	11 59 9.23	14.506	+ 0 34 33.9	113.52	0 54.6	7	14 22 30.30	8.170	17 25 23.7	51.24	1 19.5
8	12 4 55.13	14.320	- 0 10 41.0	112.70	0 56.4	8	14 25 40.22	7.646	17 45 1.3	46.84	1 18.8
9	12 10 36.67	14.142	0 55 35.1	111.79	0 58.1	9	14 28 36.88	7.065	18 2 49.6	42.13	1 17.7
10	12 16 14.02	13.971	1 40 6.4	110.81	0 59.9	10	14 31 18.86	6.422	18 18 40.3	37.03	1 16.5
11	12 21 47.35	+ 13.807	- 2 24 13.2	- 109.75	1 1.4	11	14 33 44.57	+ 5.709	- 18 32 24.0	- 31.54	1 15.0
12	12 27 16.80	13.648	3 7 53.6	108.61	1 3.0	12	14 35 52.30	4.922	18 43 50.6	25.59	1 13.1
13	12 32 42.49	13.494	3 51 6.0	107.41	1 4.5	13	14 37 40.22	4.057	18 52 48.5	19.15	1 11.0
14	12 38 4.54	13.344	4 33 48.7	106.14	1 5.9	14	14 39 6.38	3.109	18 59 5.3	12.16	1 8.5
15	12 43 23.03	13.197	5 16 0.2	104.80	1 7.3	15	14 40 8.76	2.075	19 2 27.5	- 4.59	1 5.6
16	12 48 38.03	+ 13.054	- 5 57 38.4	- 103.38	1 8.6	16	14 40 45.31	+ 0.956	- 19 2 40.3	+ 3.64	1 2.2
17	12 53 49.62	12.912	6 38 42.1	101.91	1 9.8	17	14 40 54.00	- 0.245	18 59 28.2	12.50	0 58.4
18	12 58 57.80	12.770	7 19 9.5	100.36	1 11.0	18	14 40 32.97	1.519	18 52 35.3	22.02	0 54.1
19	13 4 2.58	12.629	7 58 59.0	98.75	1 12.1	19	14 39 40.62	2.851	18 41 46.0	32.18	0 49.3
20	13 9 3.96	12.486	8 38 8.8	97.06	1 13.2	20	14 38 15.81	4.220	18 26 46.2	42.90	0 43.9
21	13 14 1.87	+ 12.340	- 9 16 37.1	- 95.29	1 14.2	21	14 36 18.00	- 5.596	- 18 7 23.9	+ 54.01	0 38.0
22	13 18 56.26	12.191	9 54 22.2	93.45	1 15.2	22	14 33 47.50	6.937	17 43 32.2	65.31	0 31.6
23	13 23 47.01	12.037	10 31 21.9	91.52	1 16.1	23	14 30 45.69	8.195	17 15 10.2	76.46	0 24.7
24	13 28 33.98	11.876	11 7 34.3	89.50	1 16.9	24	14 27 15.23	9.316	16 42 26.6	87.04	0 17.2
25	13 33 17.01	11.708	11 42 57.2	87.39	1 17.7	25	14 23 20.11	10.238	16 5 40.8	96.55	0 9.4
26	13 37 55.86	+ 11.529	- 12 17 28.2	- 85.18	1 18.4	26	14 19 5.77	- 10.908	- 15 25 25.4	+ 104.41	0 13
27	13 42 30.29	11.338	12 51 4.9	82.86	1 19.0	27	14 14 38.96	11.271	14 42 26.7	110.06	23 44.5
28	13 46 59.96	11.133	13 23 44.6	80.43	1 19.6	28	14 10 7.45	11.295	13 57 43.7	113.02	23 36.1
29	13 51 24.54	10.912	13 55 24.5	77.87	1 20.0	29	14 5 39.63	10.962	13 12 25.8	112.92	23 28.0
30	13 55 43.57	10.671	14 26 1.4	75.18	1 20.4	30	14 1 24.04	10.280	12 27 48.1	109.66	23 20.1
31	13 59 56.58	+ 10.409	- 14 55 31.8	- 72.33	1 20.7	31	13 57 28.75	- 9.276	- 11 45 6.6	+ 103.29	23 12.8
32	14 4 2.99	+ 10.121	- 15 23 52.1	- 69.33	1 20.8	32	13 54 0.94	- 8.000	- 11 5 32.4	+ 94.12	23 5.9
Day of the Month.						Day of the Month.					
2d. 7th. 12th. 17th. 22d. 27th.						2d. 7th. 12th. 17th. 22d. 27th.					
Semidiameter . . . 2.47 2.52 2.61 2.70 2.83 3.00						Semidiameter . . . 3.22 3.51 3.87 4.32 4.76 4.98					
Hor. Parallax . . . 6.50 6.64 6.84 7.12 7.47 7.91						Hor. Parallax . . . 8.49 9.25 10.20 11.36 12.55 13.13					

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	13 54 0.94	- 8.000	- 11 5 32.4	+ 94.12	23 5.9	1	15 37 39.78	+ 15.527	- 18 37 35.4	- 70.88	23 0.1
2	13 51 6.45	6.511	10 30 6.9	82.66	22 59.7	2	15 43 53.89	15.648	19 5 34.3	69.00	23 2.4
3	13 48 49.60	4.875	9 59 38.4	69.49	22 54.1	3	15 50 10.84	15.764	19 32 46.5	67.00	23 4.8
4	13 47 13.09	3.160	9 34 39.9	55.26	22 49.3	4	15 56 30.51	15.875	19 59 9.3	64.88	23 7.3
5	13 46 18.11	- 1.423	9 15 29.8	40.55	22 45.1	5	16 2 52.80	15.982	20 24 39.9	62.66	23 9.7
6	13 46 4.52	+ 0.282	- 9 2 12.6	+ 25.93	22 41.6	6	16 9 17.63	+ 16.086	- 20 49 16.0	- 60.34	23 12.2
7	13 46 31.11	1.918	8 54 41.4	+ 11.80	22 38.7	7	16 15 44.93	16.188	21 12 55.3	57.91	23 14.8
8	13 47 35.82	3.455	8 52 40.0	- 1.52	22 36.4	8	16 22 14.64	16.287	21 35 35.7	55.43	23 17.4
9	13 49 16.04	4.876	8 55 46.0	13.79	22 34.6	9	16 28 46.70	16.384	21 57 15.2	52.85	23 20.0
10	13 51 28.89	6.172	9 3 32.9	24.91	22 33.3	10	16 35 21.07	16.480	22 17 52.1	50.20	23 22.7
11	13 54 11.30	+ 7.341	- 9 15 32.1	- 34.81	22 32.5	11	16 41 57.72	+ 16.573	- 22 37 24.4	- 47.48	23 25.4
12	13 57 20.26	8.385	9 31 14.2	43.50	22 32.1	12	16 48 36.56	16.664	22 55 50.5	44.68	23 28.2
13	14 0 52.85	9.312	9 50 10.5	51.01	22 32.0	13	16 55 17.58	16.754	23 13 8.6	41.82	23 30.9
14	14 4 46.34	10.129	10 11 53.7	57.41	22 32.2	14	17 2 0.74	16.842	23 29 17.4	38.90	23 33.7
15	14 8 58.23	10.846	10 35 58.1	62.79	22 32.8	15	17 8 45.98	16.928	23 44 15.2	35.91	23 36.6
16	14 13 26.26	+ 11.476	- 11 2 0.1	- 67.23	22 33.5	16	17 15 33.26	+ 17.011	- 23 58 0.5	- 32.86	23 39.5
17	14 18 8.43	12.026	11 29 38.5	70.83	22 34.5	17	17 22 22.52	17.093	24 10 31.8	29.75	23 42.4
18	14 23 2.97	12.508	11 58 34.0	73.67	22 35.6	18	17 29 13.70	17.171	24 21 47.8	26.57	23 45.4
19	14 28 8.35	12.930	12 28 29.5	75.85	22 36.9	19	17 36 6.73	17.247	24 31 47.0	23.35	23 48.3
20	14 33 23.22	13.301	12 59 9.9	77.43	22 38.4	20	17 43 1.55	17.320	24 40 28.1	20.06	23 51.3
21	14 38 46.44	+ 13.627	- 13 30 21.8	- 78.48	22 39.9	21	17 49 58.08	+ 17.390	- 24 47 49.7	- 16.72	23 54.4
22	14 44 17.02	13.916	14 1 53.3	79.07	22 41.6	22	17 56 56.22	17.455	24 53 50.5	13.33	23 57.4
23	14 49 54.13	14.172	14 33 34.1	79.26	22 43.4	23	18 3 55.89	17.517	24 58 29.3	9.90	24 0.0
24	14 55 37.04	14.400	15 5 15.0	79.09	22 45.2	24	18 10 57.03	17.577	25 1 44.7	6.39	0 0.5
25	15 1 25.16	14.606	15 36 48.1	78.61	22 47.2	25	18 17 59.53	17.631	25 3 35.6	- 2.84	0 3.6
26	15 7 17.98	+ 14.792	- 16 8 6.0	- 77.85	22 49.2	26	18 25 3.25	+ 17.678	- 25 4 0.6	+ 0.76	0 6.7
27	15 13 15.07	14.962	16 39 2.8	76.84	22 51.2	27	18 32 8.03	17.720	25 2 58.8	4.40	0 9.9
28	15 19 16.09	15.119	17 9 32.7	75.61	22 53.4	28	18 39 13.76	17.757	25 0 28.9	8.09	0 13.0
29	15 25 20.68	15.263	17 39 30.9	74.23	22 55.6	29	18 46 20.31	17.788	24 56 30.0	11.83	0 16.2
30	15 31 28.65	15.399	18 8 53.1	72.64	22 57.8	30	18 53 27.52	17.812	24 51 0.9	15.60	0 19.4
31	15 37 39.78	+ 15.527	- 18 37 35.4	- 70.88	23 0.1	31	19 0 35.22	+ 17.829	- 24 44 0.9	+ 19.41	0 22.6
32	15 43 53.89	+ 15.648	- 19 5 34.3	- 69.00	23 2.4	32	19 7 43.23	+ 17.838	- 24 35 29.0	+ 23.26	0 25.8

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter	4.73	4.14	3.56	3.14	2.84	2.64	Semidiameter	2.50	2.41	2.36	2.32	2.31	2.33	2.36
Hor. Parallax	12.45	10.91	9.40	8.26	7.48	6.95	Hor. Parallax	6.59	6.35	6.19	6.11	6.08	6.12	6.22

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"			h m s	s	° ' "	"	
1	20 36 51.71	+ 12.838	- 20 19 38.7	+ 45.93	1 58.0	1	23 5 25.55	+ 11.238	- 7 13 44.4	+ 75.60	2 24.3
2	20 41 59.16	12.782	20 0 58.9	47.37	1 59.1	2	23 9 54.83	11.203	6 43 24.5	76.04	2 24.9
3	20 47 5.26	12.726	19 41 44.9	48.78	2 0.3	3	23 14 23.28	11.169	6 12 54.4	76.45	2 25.4
4	20 52 9.99	12.669	19 21 57.4	50.16	2 1.4	4	23 18 50.94	11.137	5 42 15.0	76.82	2 25.9
5	20 57 13.35	12.612	19 1 37.2	51.51	2 2.5	5	23 23 17.85	11.106	5 11 27.1	77.16	2 26.4
6	21 2 15.33	+ 12.554	- 18 40 45.0	+ 52.82	2 3.6	6	23 27 44.04	+ 11.076	- 4 40 31.4	+ 77.47	2 26.9
7	21 7 15.93	12.496	18 19 21.6	54.10	2 4.7	7	23 32 9.53	11.047	4 9 28.6	77.75	2 27.4
8	21 12 15.13	12.437	17 57 27.6	55.35	2 5.7	8	23 36 34.37	11.020	3 38 19.5	78.00	2 27.9
9	21 17 12.92	12.378	17 35 4.0	56.57	2 6.7	9	23 40 58.59	10.996	3 7 4.9	78.21	2 28.3
10	21 22 9.30	12.320	17 12 11.5	57.76	2 7.7	10	23 45 22.22	10.973	2 35 45.5	78.39	2 28.7
11	21 27 4.28	+ 12.262	- 16 48 51.0	+ 58.93	2 8.7	11	23 49 45.30	+ 10.951	- 2 4 22.1	+ 78.54	2 29.2
12	21 31 57.86	12.204	16 25 3.1	60.06	2 9.6	12	23 54 7.87	10.930	1 32 55.4	78.66	2 29.6
13	21 36 50.06	12.147	16 0 48.7	61.15	2 10.5	13	23 58 29.97	10.911	1 1 26.1	78.75	2 30.0
14	21 41 40.89	12.090	15 36 8.5	62.20	2 11.4	14	0 2 51.63	10.894	- 0 29 55.0	78.81	2 30.4
15	21 46 30.37	12.033	15 11 3.3	63.22	2 12.3	15	0 7 12.89	10.878	+ 0 1 37.2	78.85	2 30.8
16	21 51 18.49	+ 11.977	- 14 45 34.1	+ 64.20	2 13.2	16	0 11 33.79	+ 10.864	+ 0 33 9.8	+ 78.86	2 31.2
17	21 56 5.29	11.922	14 19 41.5	65.15	2 14.0	17	0 15 54.37	10.851	1 4 42.0	78.83	2 31.6
18	22 0 50.78	11.868	13 53 26.4	66.07	2 14.8	18	0 20 14.67	10.840	1 36 13.1	78.77	2 32.0
19	22 5 34.99	11.815	13 26 49.6	66.96	2 15.6	19	0 24 34.72	10.831	2 7 42.5	78.68	2 32.4
20	22 10 17.94	11.763	12 59 51.8	67.82	2 16.4	20	0 28 54.57	10.824	2 39 9.4	78.55	2 32.8
21	22 14 59.66	+ 11.713	- 12 32 33.7	+ 68.66	2 17.2	21	0 33 14.25	+ 10.818	+ 3 10 33.1	+ 78.39	2 33.2
22	22 19 40.17	11.664	12 4 56.0	69.46	2 17.9	22	0 37 33.81	10.814	3 41 52.9	78.21	2 33.6
23	22 24 19.50	11.616	11 36 59.7	70.22	2 18.6	23	0 41 53.27	10.811	4 13 8.1	78.01	2 34.0
24	22 28 57.68	11.569	11 8 45.6	70.95	2 19.3	24	0 46 12.68	10.809	4 44 18.1	77.79	2 34.4
25	22 33 34.74	11.523	10 40 14.5	71.64	2 20.0	25	0 50 32.07	10.808	5 15 22.2	77.54	2 34.7
26	22 38 10.71	+ 11.477	- 10 11 27.3	+ 72.29	2 20.7	26	0 54 51.48	+ 10.809	+ 5 46 19.8	+ 77.26	2 35.1
27	22 42 45.63	11.433	9 42 24.6	72.92	2 21.3	27	0 59 10.94	10.812	6 17 10.0	76.95	2 35.5
28	22 47 19.52	11.390	9 13 7.1	73.52	2 21.9	28	1 3 30.48	10.816	6 47 52.2	76.60	2 35.9
29	22 51 52.42	11.349	8 43 35.5	74.09	2 22.5	29	1 7 50.14	10.822	7 18 25.7	76.21	2 36.3
30	22 56 24.38	11.311	8 13 50.6	74.63	2 23.1	30	1 12 9.95	10.829	7 48 49.8	75.79	2 36.7
31	23 0 55.41	+ 11.274	- 7 43 53.3	+ 75.13	2 23.7	31	1 16 29.93	+ 10.837	+ 8 19 3.8	+ 75.34	2 37.1
32	23 5 25.55	+ 11.238	- 7 13 44.4	+ 75.60	2 24.3	32	1 20 50.11	+ 10.846	+ 8 49 7.1	+ 74.87	2 37.5
Day of the Month. 1st. 6th. 11th. 16th. 21st. 26th. 31st.						Day of the Month. 5th. 10th. 15th. 20th. 25th.					
Semidiameter. 5.87 5.96 6.06 6.16 6.28 6.40 6.54						Semidiameter. 6.68 6.83 6.99 7.18 7.37					
Hor. Parallax. 6.03 6.13 6.24 6.35 6.47 6.60 6.73						Hor. Parallax. 6.88 7.04 7.21 7.39 7.59					

NOTE.—The sign + indicates north declinations, the sign - indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.								
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.			
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.				
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m			
1	1 12 9.95	+10.829	+ 7 48 49.8	+75.79	2 36.7	1	3 29 12.46	+11.311	+21 11 10.3	+49.36	2 51.4			
2	1 16 29.93	10.837	8 19 3.8	75.34	2 37.1	2	3 33 44.04	11.321	21 30 40.0	48.12	2 52.0			
3	1 20 50.11	10.846	8 49 7.1	74.87	2 37.5	3	3 38 15.87	11.330	21 49 39.6	46.85	2 52.6			
4	1 25 10.51	10.856	9 18 58.9	74.38	2 37.9	4	3 42 47.91	11.338	22 8 8.6	45.58	2 53.2			
5	1 29 31.16	10.867	9 48 38.4	73.86	2 38.3	5	3 47 20.11	11.344	22 26 6.3	44.25	2 53.8			
6	1 33 52.08	+10.878	+10 18 5.0	+73.32	2 38.7	6	3 51 52.41	+11.346	+22 43 32.4	+42.92	2 54.4			
7	1 38 13.28	10.890	10 47 17.9	72.74	2 39.1	7	3 56 24.75	11.346	23 0 26.5	41.58	2 55.0			
8	1 42 34.79	10.903	11 16 16.4	72.13	2 39.5	8	4 0 57.09	11.345	23 16 48.1	40.22	2 55.6			
9	1 46 56.62	10.917	11 44 59.9	71.49	2 39.9	9	4 5 29.39	11.342	23 32 36.9	38.84	2 56.2			
10	1 51 18.80	10.932	12 13 27.7	70.82	2 40.3	10	4 10 1.57	11.337	23 47 52.6	37.45	2 56.8			
11	1 55 41.34	+10.947	+12 41 39.0	+70.11	2 40.8	11	4 14 33.59	+11.330	+24 2 34.8	+36.05	2 57.3			
12	2 0 4.24	10.963	13 9 33.2	69.37	2 41.2	12	4 19 5.36	11.319	24 16 43.1	34.64	2 57.9			
13	2 4 27.53	10.979	13 37 9.6	68.61	2 41.6	13	4 23 36.82	11.305	24 30 17.2	33.22	2 58.5			
14	2 8 51.24	10.996	14 4 27.7	67.83	2 42.0	14	4 28 7.90	11.287	24 43 16.9	31.78	2 59.1			
15	2 13 15.36	11.013	14 31 26.6	67.03	2 42.5	15	4 32 38.52	11.265	24 55 42.2	30.31	2 59.7			
16	2 17 39.90	+11.031	+14 58 5.6	+66.20	2 43.0	16	4 37 8.61	+11.238	+25 7 32.9	+28.88	3 0.3			
17	2 22 4.87	11.049	15 24 24.1	65.34	2 43.5	17	4 41 38.10	11.210	25 18 48.5	27.42	3 0.9			
18	2 26 30.29	11.068	15 50 21.5	64.45	2 44.0	18	4 46 6.91	11.180	25 29 29.0	25.96	3 1.4			
19	2 30 56.16	11.087	16 15 57.1	63.53	2 44.5	19	4 50 34.96	11.148	25 39 34.4	24.49	3 1.9			
20	2 35 22.48	11.106	16 41 10.5	62.58	2 45.0	20	4 55 2.15	11.114	25 49 4.6	23.02	3 2.4			
21	2 39 49.25	+11.125	+17 6 0.9	+61.61	2 45.5	21	4 59 28.40	+11.075	+25 57 59.5	+21.55	3 2.9			
22	2 44 16.48	11.144	17 30 27.6	60.62	2 46.0	22	5 3 53.63	11.031	26 6 19.1	20.08	3 3.4			
23	2 48 44.16	11.163	17 54 30.2	59.60	2 46.5	23	5 8 17.75	10.983	26 14 3.6	18.62	3 3.8			
24	2 53 12.29	11.182	18 18 8.0	58.55	2 47.0	24	5 12 40.66	10.930	26 21 13.0	17.16	3 4.3			
25	2 57 40.87	11.201	18 41 20.4	57.48	2 47.5	25	5 17 2.29	10.873	26 27 47.3	15.70	3 4.7			
26	3 2 9.90	+11.219	+19 4 6.8	+56.38	2 48.1	26	5 21 22.52	+10.812	+26 33 46.7	+14.25	3 5.1			
27	3 6 39.36	11.236	19 26 26.8	55.26	2 48.6	27	5 25 41.24	10.747	26 39 11.3	12.81	3 5.5			
28	3 11 9.23	11.253	19 48 19.8	54.12	2 49.1	28	5 29 58.33	10.677	26 44 1.3	11.38	3 5.8			
29	3 15 39.50	11.269	20 9 45.2	52.96	2 49.7	29	5 34 13.68	10.602	26 48 17.0	9.95	3 6.1			
30	3 20 10.15	11.284	20 30 42.4	51.78	2 50.3	30	5 38 27.17	10.522	26 51 58.6	8.53	3 6.4			
31	3 24 41.15	+11.298	+20 51 11.0	+50.58	2 50.9	31	5 42 38.70	+10.436	+26 55 6.3	+7.12	3 6.6			
1	3 29 12.46	+11.311	+21 11 10.3	+49.36	2 51.4	1	5 46 48.13	+10.346	+26 57 40.4	+5.73	3 6.8			
Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter	7 58	7.81	8 06	8.34	8 63	8 96	9 32	Semidiameter	9.72	10 16	10 65	11.20	11 51	12 50
Hor. Parallax	7.81	8 04	8 29	8.58	8 89	9 23	9 60	Hor. Parallax	10 01	10.46	10 90	11 53	12 18	12 57

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign — indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° "	"	h m		h m s	s	° "	"	h m
1	20 36 51.71	+ 12.838	- 20 19 38.7	+ 45.93	1 58.0	1	23 5 25.55	+ 11.238	- 7 13 44.4	+ 75.60	2 24.3
2	20 41 59.16	12.782	20 0 58.9	47.37	1 59.1	2	23 9 54.83	11.203	6 43 24.5	76.04	2 24.9
3	20 47 5.26	12.726	19 41 44.9	48.78	2 0.3	3	23 14 23.28	11.169	6 12 54.4	76.45	2 25.4
4	20 52 9.99	12.669	19 21 57.4	50.16	2 1.4	4	23 18 50.94	11.137	5 42 15.0	76.82	2 25.9
5	20 57 13.35	12.612	19 1 37.2	51.51	2 2.5	5	23 23 17.85	11.106	5 11 27.1	77.16	2 26.4
6	21 2 15.33	+ 12.554	- 18 40 45.0	+ 52.82	2 3.6	6	23 27 44.04	+ 11.076	- 4 40 31.4	+ 77.47	2 26.9
7	21 7 15.93	12.496	18 19 21.6	54.10	2 4.7	7	23 32 9.53	11.047	4 9 28.6	77.75	2 27.4
8	21 12 15.13	12.437	17 57 27.6	55.35	2 5.7	8	23 36 34.37	11.020	3 38 19.5	78.00	2 27.9
9	21 17 12.92	12.378	17 35 4.0	56.57	2 6.7	9	23 40 58.59	10.996	3 7 4.9	78.21	2 28.3
10	21 22 9.30	12.320	17 12 11.5	57.76	2 7.7	10	23 45 22.22	10.973	2 35 45.5	78.39	2 28.7
11	21 27 4.28	+ 12.262	- 16 48 51.0	+ 58.93	2 8.7	11	23 49 45.30	+ 10.951	- 2 4 22.1	+ 78.54	2 29.2
12	21 31 57.86	12.204	16 25 3.1	60.06	2 9.6	12	23 54 7.87	10.930	1 32 55.4	78.66	2 29.6
13	21 36 50.06	12.147	16 0 48.7	61.15	2 10.5	13	23 58 29.97	10.911	1 1 26.1	78.75	2 30.0
14	21 41 40.89	12.090	15 36 8.5	62.20	2 11.4	14	0 2 51.63	10.894	- 0 29 55.0	78.81	2 30.4
15	21 46 30.37	12.033	15 11 3.3	63.22	2 12.3	15	0 7 12.89	10.878	+ 0 1 37.2	78.85	2 30.8
16	21 51 18.49	+ 11.977	- 14 45 34.1	+ 64.20	2 13.2	16	0 11 33.79	+ 10.864	+ 0 33 9.8	+ 78.86	2 31.2
17	21 56 5.29	11.922	14 19 41.5	65.15	2 14.0	17	0 15 54.37	10.851	1 4 42.0	78.83	2 31.6
18	22 0 50.78	11.868	13 53 26.4	66.07	2 14.8	18	0 20 14.67	10.840	1 36 13.1	78.77	2 32.0
19	22 5 34.99	11.815	13 26 49.6	66.96	2 15.6	19	0 24 34.72	10.831	2 7 42.5	78.68	2 32.4
20	22 10 17.94	11.763	12 59 51.8	67.82	2 16.4	20	0 28 54.57	10.824	2 39 9.4	78.55	2 32.8
21	22 14 59.66	+ 11.713	- 12 32 33.7	+ 68.66	2 17.2	21	0 33 14.25	+ 10.818	+ 3 10 33.1	+ 78.39	2 33.2
22	22 19 40.17	11.664	12 4 56.0	69.46	2 17.9	22	0 37 33.81	10.814	3 41 52.9	78.21	2 33.6
23	22 24 19.50	11.616	11 36 59.7	70.22	2 18.6	23	0 41 53.27	10.811	4 13 8.1	78.01	2 34.0
24	22 28 57.68	11.569	11 8 45.6	70.95	2 19.3	24	0 46 12.68	10.809	4 44 18.1	77.79	2 34.4
25	22 33 34.74	11.523	10 40 14.5	71.64	2 20.0	25	0 50 32.07	10.808	5 15 22.2	77.54	2 34.7
26	22 38 10.71	+ 11.477	- 10 11 27.3	+ 72.29	2 20.7	26	0 54 51.48	+ 10.809	+ 5 46 19.8	+ 77.26	2 35.1
27	22 42 45.63	11.433	9 42 24.6	72.92	2 21.3	27	0 59 10.94	10.812	6 17 10.0	76.95	2 35.5
28	22 47 19.52	11.390	9 13 7.1	73.52	2 21.9	28	1 3 30.48	10.816	6 47 52.2	76.60	2 35.9
29	22 51 52.42	11.349	8 43 35.5	74.09	2 22.5	29	1 7 50.14	10.822	7 18 25.7	76.21	2 36.3
30	22 56 24.38	11.311	8 13 50.6	74.63	2 23.1	30	1 12 9.95	10.829	7 48 49.8	75.79	2 36.7
31	23 0 55.41	+ 11.274	- 7 43 53.3	+ 75.13	2 23.7	31	1 16 29.93	+ 10.837	+ 8 19 3.8	+ 75.34	2 37.1
32	23 5 25.55	+ 11.238	- 7 13 44.4	+ 75.60	2 24.3	32	1 20 50.11	+ 10.846	+ 8 49 7.1	+ 74.87	2 37.5
Day of the Month.						Day of the Month.					
1st. 6th. 11th. 16th. 21st. 26th. 31st.						5th. 10th. 15th. 20th. 25th.					
Semidiameter . 5.87 5.96 6.06 6.16 6.28 6.40 6.54						Semidiameter . . . 6.68 6.83 6.99 7.18 7.37					
Hor. Parallax . 6.03 6.13 6.24 6.35 6.47 6.60 6.73						Hor. Parallax . . . 6.88 7.04 7.21 7.39 7.59					

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	1 12 9.95	+ 10.829	+ 7 48 49.8	+ 75.79	2 36.7	1	3 29 12.46	+ 11.311	+ 21 11 10.3	+ 49.36	2 51.4
2	1 16 29.93	10.837	8 19 3.8	75.34	2 37.1	2	3 33 44.04	11.321	21 30 40.0	48.12	2 52.0
3	1 20 50.11	10.846	8 49 7.1	74.87	2 37.5	3	3 38 15.87	11.330	21 49 39.6	46.85	2 52.6
4	1 25 10.51	10.856	9 18 58.9	74.38	2 37.9	4	3 42 47.91	11.338	22 8 8.6	45.56	2 53.2
5	1 29 31.16	10.867	9 48 38.4	73.86	2 38.3	5	3 47 20.11	11.344	22 26 6.3	44.25	2 53.8
6	1 33 52.08	+ 10.878	+ 10 18 5.0	+ 73.32	2 38.7	6	3 51 52.41	+ 11.346	+ 22 43 32.4	+ 42.92	2 54.4
7	1 38 13.28	10.890	10 47 17.9	72.74	2 39.1	7	3 56 24.75	11.346	23 0 26.5	41.58	2 55.0
8	1 42 34.79	10.903	11 16 16.4	72.13	2 39.5	8	4 0 57.09	11.345	23 16 48.1	40.22	2 55.6
9	1 46 56.62	10.917	11 44 59.9	71.49	2 39.9	9	4 5 29.39	11.342	23 32 36.9	38.84	2 56.2
10	1 51 18.80	10.932	12 13 27.7	70.82	2 40.3	10	4 10 1.57	11.337	23 47 52.6	37.45	2 56.8
11	1 55 41.34	+ 10.947	+ 12 41 39.0	+ 70.11	2 40.8	11	4 14 33.59	+ 11.330	+ 24 2 34.8	+ 36.05	2 57.3
12	2 0 4.24	10.963	13 9 33.2	69.37	2 41.2	12	4 19 5.36	11.319	24 16 43.1	34.64	2 57.9
13	2 4 27.53	10.979	13 37 9.6	68.61	2 41.6	13	4 23 36.82	11.305	24 30 17.2	33.22	2 58.5
14	2 8 51.24	10.996	14 4 27.7	67.83	2 42.0	14	4 28 7.90	11.287	24 43 16.9	31.78	2 59.1
15	2 13 15.36	11.013	14 31 26.6	67.03	2 42.5	15	4 32 38.52	11.265	24 55 42.2	30.33	2 59.7
16	2 17 39.90	+ 11.031	+ 14 58 5.6	+ 66.20	2 43.0	16	4 37 8.61	+ 11.238	+ 25 7 32.9	+ 28.88	3 0.3
17	2 22 4.87	11.049	15 24 24.1	65.34	2 43.5	17	4 41 38.10	11.210	25 18 48.5	27.42	3 0.9
18	2 26 30.29	11.068	15 50 21.5	64.45	2 44.0	18	4 46 6.91	11.180	25 29 29.0	25.96	3 1.4
19	2 30 56.16	11.087	16 15 57.1	63.53	2 44.5	19	4 50 34.96	11.148	25 39 34.4	24.49	3 1.9
20	2 35 22.48	11.106	16 41 10.5	62.58	2 45.0	20	4 55 2.15	11.114	25 49 4.6	23.02	3 2.4
21	2 39 49.25	+ 11.125	+ 17 6 0.9	+ 61.61	2 45.5	21	4 59 28.40	+ 11.075	+ 25 57 59.5	+ 21.55	3 2.9
22	2 44 16.48	11.144	17 30 27.6	60.62	2 46.0	22	5 3 53.63	11.031	26 6 19.1	20.08	3 3.4
23	2 48 44.16	11.163	17 54 30.2	59.60	2 46.5	23	5 8 17.75	10.983	26 14 3.6	18.62	3 3.8
24	2 53 12.29	11.182	18 18 8.0	58.55	2 47.0	24	5 12 40.66	10.930	26 21 13.0	17.16	3 4.3
25	2 57 40.87	11.201	18 41 20.4	57.48	2 47.5	25	5 17 2.29	10.873	26 27 47.3	15.70	3 4.7
26	3 2 9.90	+ 11.219	+ 19 4 6.8	+ 56.38	2 48.1	26	5 21 22.52	+ 10.812	+ 26 33 46.7	+ 14.25	3 5.1
27	3 6 39.36	11.236	19 26 26.8	55.26	2 48.6	27	5 25 41.24	10.747	26 39 11.3	12.81	3 5.5
28	3 11 9.23	11.253	19 48 19.8	54.12	2 49.1	28	5 29 58.33	10.677	26 44 1.3	11.38	3 5.8
29	3 15 39.50	11.269	20 9 45.2	52.96	2 49.7	29	5 34 13.68	10.602	26 48 17.0	9.95	3 6.1
30	3 20 10.15	11.284	20 30 42.4	51.78	2 50.3	30	5 38 27.17	10.522	26 51 58.6	8.53	3 6.4
31	3 24 41.15	+ 11.298	+ 20 51 11.0	+ 50.58	2 50.9	31	5 42 38.70	+ 10.436	+ 26 55 6.3	+ 7.12	3 6.6
32	3 29 12.46	+ 11.311	+ 21 11 10.3	+ 49.36	2 51.4	32	5 46 48.13	+ 10.346	+ 26 57 40.4	+ 5.73	3 6.8
Day of the Month.						Day of the Month.					
1st. 6th. 11th. 16th. 21st. 26th. 31st.						5th. 10th. 15th. 20th. 25th. 30th.					
Semidiameter . 7.58 7.81 8.06 8.34 8.63 8.96 9.32						Semidiameter . . 9.72 10.16 10.65 11.20 11.81 12.50					
Hor. Parallax . 7.81 8.04 8.29 8.58 8.89 9.23 9.60						Hor. Parallax . . 10.01 10.46 10.96 11.53 12.18 12.87					

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign — indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	5 42 38.70	+ 10.436	+ 26 55 6.3	+ 7.12	3 6.6	1	7 23 0.44	+ 4.615	+ 24 40 48.7	- 23.72	2 44.5
2	5 46 48.13	10.346	26 57 40.4	5.73	3 6.8	2	7 24 47.44	4.298	24 31 23.0	24.16	2 42.3
3	5 50 55.33	10.250	26 59 41.3	4.35	3 7.0	3	7 26 26.71	3.971	24 21 27.3	24.57	2 40.0
4	5 55 0.16	10.149	27 1 9.4	2.99	3 7.1	4	7 27 58.01	3.634	24 11 32.6	24.95	2 37.6
5	5 59 2.50	10.043	27 2 5.0	1.65	3 7.2	5	7 29 21.09	3.286	24 1 29.7	25.28	2 35.0
6	6 3 2.20	+ 9.931	+ 27 2 28.6	+ 0.33	3 7.2	6	7 30 35.70	+ 2.928	+ 23 51 19.6	- 25.57	2 32.3
7	6 6 59.12	9.812	27 2 20.6	- 0.97	3 7.1	7	7 31 41.60	2.560	23 41 3.0	25.82	2 29.5
8	6 10 53.13	9.687	27 1 41.6	2.25	3 7.1	8	7 32 38.55	2.182	23 30 40.8	26.03	2 26.5
9	6 14 44.07	9.556	27 0 32.2	3.51	3 7.0	9	7 33 26.31	1.795	23 20 13.9	26.20	2 23.3
10	6 18 31.80	9.419	26 58 52.8	4.75	3 7.0	10	7 34 4.66	1.398	23 9 43.1	26.34	2 20.0
11	6 22 16.16	+ 9.276	+ 26 56 44.0	- 5.95	3 6.9	11	7 34 33.40	+ 0.994	+ 22 59 9.0	- 26.46	2 16.5
12	6 25 57.01	9.125	26 54 6.6	7.12	3 6.7	12	7 34 52.33	0.581	22 48 32.4	26.55	2 12.9
13	6 29 34.20	8.970	26 51 1.1	8.27	3 6.4	13	7 35 1.27	+ 0.162	22 37 54.0	26.62	2 9.1
14	6 33 7.55	8.807	26 47 28.3	9.41	3 5.9	14	7 35 0.08	- 0.262	22 27 14.3	26.67	2 5.1
15	6 36 36.90	8.637	26 43 28.7	10.52	3 5.3	15	7 34 48.66	0.691	22 16 34.0	26.70	2 1.0
16	6 40 2.11	+ 8.461	+ 26 39 3.2	- 11.60	3 4.7	16	7 34 26.92	- 1.122	+ 22 5 53.5	- 26.70	1 56.7
17	6 43 23.02	8.279	26 34 12.5	12.64	3 4.1	17	7 33 54.82	1.554	21 55 13.3	26.67	1 52.2
18	6 46 39.46	8.089	26 28 57.5	13.64	3 3.4	18	7 33 12.35	1.985	21 44 34.1	26.62	1 47.5
19	6 49 51.27	7.893	26 23 18.9	14.60	3 2.7	19	7 32 19.57	2.413	21 33 56.2	26.54	1 42.7
20	6 52 58.28	7.689	26 17 17.6	15.51	3 1.9	20	7 31 16.57	2.836	21 23 20.0	26.45	1 37.7
21	6 56 0.32	+ 7.478	+ 26 10 54.4	- 16.39	3 1.0	21	7 30 3.49	- 3.252	+ 21 12 45.9	- 26.35	1 32.6
22	6 58 57.21	7.260	26 4 10.2	17.24	3 0.0	22	7 28 40.54	3.658	21 2 14.4	26.24	1 27.3
23	7 1 48.78	7.035	25 57 5.8	18.07	2 58.9	23	7 27 8.01	4.052	20 51 45.8	26.12	1 21.8
24	7 4 34.85	6.801	25 49 42.1	18.87	2 57.7	24	7 25 26.21	4.439	20 41 20.4	25.98	1 16.2
25	7 7 15.21	6.559	25 42 0.1	19.64	2 56.4	25	7 23 35.53	4.788	20 30 58.8	25.82	1 10.5
26	7 9 49.67	+ 6.309	+ 25 34 0.6	- 20.36	2 55.0	26	7 21 36.45	- 5.128	+ 20 20 41.5	- 25.63	1 4.6
27	7 12 18.02	6.050	25 25 44.5	21.04	2 53.5	27	7 19 29.49	5.444	20 10 29.2	25.41	0 58.6
28	7 14 40.04	5.782	25 17 12.8	21.67	2 51.9	28	7 17 15.27	5.732	20 0 22.4	25.16	0 52.4
29	7 16 55.53	5.505	25 8 26.4	22.25	2 50.2	29	7 14 54.49	5.990	19 50 22.0	24.88	0 46.0
30	7 19 4.25	5.218	24 59 26.3	22.77	2 48.5	30	7 12 27.89	6.215	19 40 28.7	24.56	0 39.6
31	7 21 5.97	+ 4.921	+ 24 50 13.4	- 23.26	2 46.6	31	7 9 56.30	- 6.406	+ 19 30 43.5	- 24.19	0 33.1
32	7 23 0.44	+ 4.615	+ 24 40 48.7	- 23.72	2 44.5	32	7 7 20.56	- 6.559	+ 19 21 7.4	- 23.78	0 26.6
Day of the Month.						Day of the Month.					
5th. 10th. 15th. 20th. 25th. 30th.						4th. 9th. 14th. 19th. 24th. 29th.					
Semidiameter . . . 13.27 14.15 15.15 16.26 17.53 18.94						Semidiameter . . . 20.47 22.20 24.09 25.92 27.57 28.82					
Hor. Parallax . . . 13.67 14.57 15.59 16.74 18.04 19.50						Hor. Parallax . . . 21.13 22.92 24.80 26.70 28.39 29.66					

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	7 9 56.30	-6.496	+19 30 43.5	-24.19	0 33.1	1	6 24 0.35	+1.822	+17 15 15.1	+3.87	21 42.4
2	7 7 20.56	6.559	19 21 7.4	23.78	0 26.6	2	6 24 48.42	2.181	17 16 54.6	4.41	21 39.4
3	7 4 41.63	6.672	19 11 41.8	23.32	0 20.1	3	6 25 44.99	2.531	17 18 46.4	4.89	21 36.5
4	7 2 0.46	6.745	19 2 27.9	22.81	0 13.5	4	6 26 49.85	2.872	17 20 48.8	5.29	21 33.7
5	6 59 18.04	6.776	18 53 27.1	22.24	0 6.9	5	6 28 2.79	3.203	17 23 0.3	5.63	21 31.1
6	6 56 35.36	-6.766	+18 44 40.7	-21.61	0 0.3	6	6 29 23.57	+3.524	+17 25 19.4	+5.91	21 28.6
7	6 53 53.43	6.714	18 36 10.5	20.91	23 47.1	7	6 30 51.93	3.836	17 27 44.4	6.13	21 26.3
8	6 51 13.28	6.619	18 27 58.0	20.14	23 40.6	8	6 32 27.65	4.138	17 30 13.7	6.29	21 24.1
9	6 48 35.87	6.485	18 20 4.8	19.30	23 34.1	9	6 34 10.51	4.430	17 32 45.8	6.38	21 22.0
10	6 46 2.14	6.313	18 12 32.3	18.40	23 27.7	10	6 36 0.28	4.714	17 35 19.1	6.40	21 20.0
11	6 43 33.02	-6.102	+18 5 22.0	-17.45	23 21.4	11	6 37 56.73	+4.988	+17 37 52.1	+6.36	21 18.1
12	6 41 9.38	5.857	17 58 35.3	16.44	23 15.2	12	6 39 59.67	5.254	17 40 23.4	6.25	21 16.3
13	6 38 52.00	5.581	17 52 13.4	15.38	23 9.1	13	6 42 8.91	5.511	17 42 51.5	6.08	21 14.5
14	6 36 41.62	5.276	17 46 17.5	14.27	23 3.1	14	6 44 24.22	5.759	17 45 14.9	5.85	21 12.8
15	6 34 38.87	4.945	17 40 48.6	13.11	22 57.2	15	6 46 45.35	5.998	17 47 32.3	5.57	21 11.3
16	6 32 44.36	-4.591	+17 35 47.3	-11.94	22 51.5	16	6 49 12.12	+6.229	+17 49 42.3	+5.24	21 9.9
17	6 30 58.56	4.219	17 31 14.0	10.77	22 46.0	17	6 51 44.32	6.451	17 51 43.6	4.85	21 8.7
18	6 29 21.91	3.831	17 27 9.1	9.59	22 40.7	18	6 54 21.76	6.665	17 53 34.9	4.41	21 7.5
19	6 27 54.72	3.431	17 23 32.9	8.40	22 35.5	19	6 57 4.23	6.871	17 55 15.0	3.92	21 6.4
20	6 26 37.26	3.022	17 20 25.2	7.21	22 30.4	20	6 59 51.55	7.069	17 56 42.7	3.38	21 5.3
21	6 25 29.70	-2.607	+17 17 45.5	-6.05	22 25.5	21	7 2 43.51	+7.259	+17 57 57.0	+2.80	21 4.3
22	6 24 32.16	2.188	17 15 33.4	4.92	22 20.8	22	7 5 39.93	7.441	17 58 56.9	2.18	21 3.3
23	6 23 44.70	1.767	17 13 48.3	3.82	22 16.2	23	7 8 40.64	7.616	17 59 41.2	1.51	21 2.4
24	6 23 7.34	1.347	17 12 29.3	2.76	22 11.8	24	7 11 45.46	7.784	18 0 9.1	0.80	21 1.6
25	6 22 40.03	0.930	17 11 35.4	1.74	22 7.6	25	7 14 54.22	7.945	18 0 19.6	+0.05	21 0.9
26	6 22 22.70	-0.516	+17 11 5.5	-0.77	22 3.5	26	7 18 6.78	+8.100	+18 0 11.9	-0.73	21 0.2
27	6 22 15.23	-0.108	17 10 58.3	+0.15	21 59.6	27	7 21 22.98	8.248	17 59 44.9	1.54	20 59.6
28	6 22 17.49	+0.294	17 11 12.5	1.02	21 55.9	28	7 24 42.66	8.390	17 58 57.9	2.39	20 59.1
29	6 22 29.32	0.690	17 11 46.8	1.83	21 52.3	29	7 28 5.67	8.526	17 57 50.1	3.27	20 58.6
30	6 22 50.57	1.077	17 12 39.7	2.58	21 48.8	30	7 31 31.89	8.656	17 56 20.9	4.17	20 58.1
31	6 23 20.99	+1.455	+17 13 49.6	+3.26	21 45.5	31	7 35 1.17	+8.781	+17 54 29.6	-5.10	20 57.7
32	6 24 0.35	+1.822	+17 15 15.1	+3.87	21 42.4	32	7 38 33.39	+8.901	+17 52 15.7	-6.06	20 57.3
Day of the Month.	4th.	8th.	12th.	16th.	20th.	Day of the Month.	2d.	6th.	10th.	14th.	18th.
Semidiameter	29.41	29.29	28.41	27.01	25.28	Semidiameter	21.72	20.07	18.58	17.24	16.05
Hor. Parallax	30.29	30.16	29.26	27.81	26.04	Hor. Parallax	22.39	20.67	19.13	17.74	16.51

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

GREENWICH MEAN TIME.											
SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	7 38 33.39	+ 8.901	+17 52 15.7	- 6.06	20 57.3	1	9 39 8.34	+10.698	+13 19 36.6	-39.89	21 0.2
2	7 42 8.40	9.015	17 49 38.3	7.05	20 57.0	2	9 43 25.28	10.714	13 3 26.1	40.97	21 0.5
3	7 45 46.11	9.124	17 46 37.1	8.06	20 56.7	3	9 47 42.63	10.729	12 46 49.9	42.04	21 0.9
4	7 49 26.39	9.229	17 43 11.5	9.09	20 56.5	4	9 52 0.35	10.744	12 29 48.4	43.10	21 1.2
5	7 53 9.14	9.330	17 39 20.8	10.14	20 56.3	5	9 56 18.41	10.758	12 12 21.8	44.14	21 1.6
6	7 56 54.26	+ 9.427	+17 35 4.8	-11.21	20 56.1	6	10 0 36.77	+10.771	+11 54 30.6	-45.16	21 2.0
7	8 0 41.65	9.520	17 30 23.0	12.29	20 56.0	7	10 4 55.43	10.783	11 36 15.0	46.15	21 2.3
8	8 4 31.18	9.608	17 25 15.0	13.39	20 55.9	8	10 9 14.36	10.794	11 17 35.4	47.13	21 2.7
9	8 8 22.78	9.692	17 19 40.4	14.51	20 55.9	9	10 13 33.55	10.804	10 58 32.4	48.10	21 3.0
10	8 12 16.35	9.772	17 13 38.9	15.64	20 55.8	10	10 17 52.96	10.814	10 39 6.3	49.05	21 3.4
11	8 16 11.80	+ 9.848	+17 7 10.1	-16.78	20 55.8	11	10 22 12.60	+10.823	+10 19 17.6	-49.99	21 3.8
12	8 20 9.04	9.921	17 0 13.8	17.92	20 55.9	12	10 26 32.45	10.831	9 59 6.7	50.91	21 4.2
13	8 24 7.99	9.990	16 52 49.8	19.07	20 55.9	13	10 30 52.49	10.838	9 38 34.1	51.81	21 4.6
14	8 28 8.54	10.055	16 44 57.8	20.23	20 56.0	14	10 35 12.70	10.845	9 17 40.3	52.69	21 5.0
15	8 32 10.62	10.117	16 36 37.7	21.40	20 56.1	15	10 39 33.07	10.852	8 56 25.8	53.54	21 5.4
16	8 36 14.13	+10.175	+16 27 49.4	-22.58	20 56.2	16	10 43 53.59	+10.858	+8 34 51.2	-54.36	21 5.8
17	8 40 18.99	10.229	16 18 32.8	23.78	20 56.4	17	10 48 14.26	10.864	8 12 57.1	55.15	21 6.2
18	8 44 25.12	10.280	16 8 47.8	24.98	20 56.6	18	10 52 35.06	10.870	7 50 43.8	55.92	21 6.6
19	8 48 32.44	10.328	15 58 34.5	26.17	20 56.8	19	10 56 55.98	10.875	7 28 12.1	56.67	21 7.0
20	8 52 40.87	10.373	15 47 52.8	27.35	20 57.0	20	11 1 17.03	10.880	7 5 22.5	57.40	21 7.4
21	8 56 50.35	+10.415	+15 36 42.8	-28.52	20 57.2	21	11 5 38.20	+10.885	+6 42 15.7	-58.11	21 7.9
22	9 1 0.80	10.454	15 25 4.5	29.68	20 57.4	22	11 9 59.48	10.889	6 18 52.3	58.81	21 8.3
23	9 5 12.15	10.490	15 12 58.2	30.84	20 57.7	23	11 14 20.89	10.894	5 55 12.9	59.48	21 8.7
24	9 9 24.34	10.523	15 0 23.9	32.00	20 58.0	24	11 18 42.42	10.899	5 31 18.1	60.11	21 9.1
25	9 13 37.30	10.554	14 47 21.8	33.15	20 58.3	25	11 23 4.07	10.905	5 7 8.5	60.71	21 9.5
26	9 17 50.98	+10.583	+14 33 52.0	-34.30	20 58.6	26	11 27 25.85	+10.911	+4 42 44.9	-61.28	21 10.0
27	9 22 5.33	10.611	14 19 54.8	35.45	20 58.9	27	11 31 47.78	10.917	4 18 7.8	61.81	21 10.4
28	9 26 20.28	10.636	14 5 30.4	36.58	20 59.2	28	11 36 9.85	10.924	3 53 17.9	62.32	21 10.8
29	9 30 35.80	10.659	13 50 39.0	37.70	20 59.5	29	11 40 32.09	10.931	3 28 15.9	62.81	21 11.2
30	9 34 51.83	10.680	13 35 21.0	38.80	20 59.8	30	11 44 54.50	10.939	3 3 2.4	63.27	21 11.6
31	9 39 8.34	+10.698	+13 19 36.6	-39.89	21 0.2	31	11 49 17.10	+10.947	+2 37 38.2	-63.71	21 12.1
32	9 43 25.28	+10.714	+13 3 26.1	-40.97	21 0.5	32	11 53 39.90	+10.955	+2 12 3.8	-64.13	21 12.5
Day of the Month.						Day of the Month.					
2d. 7th. 12th. 17th. 22d. 27th.						2d. 7th. 12th. 17th. 22d. 27th.					
Semidiameter						Semidiameter					
Hor. Parallax						Hor. Parallax					
14.05 13.22 12.48 11.82 11.23 10.70						10.21 9.78 9.39 9.03 8.70 8.40					
14.46 13.61 12.85 12.17 11.55 11.01						10.51 10.07 9.66 9.29 8.94 8.64					
NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.											

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"			h m s	s	° ' "	"	
1	11 53 39.90	+ 10.955	+ 2 12 3.8	- 64.13	21 12.5	1	14 8 38.74	+ 11.698	- 10 55 40.8	- 62.46	21 29.5
2	11 58 2.93	10.964	1 46 20.0	64.52	21 12.9	2	14 13 19.97	11.738	11 20 33.3	61.91	21 30.3
3	12 2 26.21	10.974	1 20 27.5	64.87	21 13.4	3	14 18 2.20	11.780	11 45 12.1	61.33	21 31.1
4	12 6 49.75	10.986	0 54 26.9	65.19	21 13.9	4	14 22 45.45	11.823	12 9 36.5	60.71	21 31.9
5	12 11 13.59	10.999	0 28 18.7	65.48	21 14.4	5	14 27 29.74	11.867	12 33 45.6	60.05	21 32.7
6	12 15 37.75	+ 11.013	+ 0 2 3.6	- 65.75	21 14.8	6	14 32 15.09	+ 11.912	- 12 57 38.7	- 59.36	21 33.5
7	12 20 2.26	11.028	- 0 24 17.5	65.99	21 15.3	7	14 37 1.53	11.958	13 21 15.0	58.64	21 34.3
8	12 24 27.13	11.044	0 50 44.0	66.20	21 15.8	8	14 41 49.07	12.005	13 44 33.7	57.89	21 35.2
9	12 28 52.39	11.061	1 17 15.3	66.38	21 16.3	9	14 46 37.74	12.052	14 7 34.1	57.11	21 36.1
10	12 33 18.07	11.079	1 43 50.6	66.53	21 16.8	10	14 51 27.55	12.100	14 30 15.3	56.30	21 37.0
11	12 37 44.20	+ 11.099	- 2 10 29.3	- 66.66	21 17.3	11	14 56 18.50	+ 12.148	- 14 52 36.5	- 55.45	21 37.9
12	12 42 10.80	11.119	2 37 10.5	66.76	21 17.8	12	15 1 10.64	12.197	15 14 37.0	54.57	21 38.9
13	12 46 37.89	11.140	3 3 53.6	66.82	21 18.3	13	15 6 3.94	12.246	15 36 15.9	53.66	21 39.9
14	12 51 5.51	11.162	3 30 37.8	66.85	21 18.8	14	15 10 58.44	12.295	15 57 32.5	52.71	21 40.9
15	12 55 33.67	11.185	3 57 22.5	66.85	21 19.4	15	15 15 54.13	12.345	16 18 25.9	51.72	21 41.9
16	13 0 2.40	+ 11.209	- 4 24 6.8	- 66.82	21 19.9	16	15 20 51.01	+ 12.395	- 16 38 55.4	- 50.71	21 42.9
17	13 4 31.72	11.234	4 50 50.0	66.76	21 20.4	17	15 25 49.10	12.445	16 59 0.1	49.66	21 43.9
18	13 9 1.67	11.260	5 17 31.3	66.66	21 21.0	18	15 30 48.38	12.495	17 18 39.4	48.58	21 45.0
19	13 13 32.26	11.288	5 44 9.9	66.53	21 21.6	19	15 35 48.86	12.545	17 37 52.4	47.47	21 46.1
20	13 18 3.52	11.317	6 10 45.0	66.37	21 22.2	20	15 40 50.53	12.594	17 56 38.3	46.33	21 47.2
21	13 22 35.48	+ 11.347	- 6 37 16.0	- 66.19	21 22.8	21	15 45 53.39	+ 12.643	- 18 14 56.4	- 45.16	21 48.3
22	13 27 8.17	11.376	7 3 42.1	65.97	21 23.4	22	15 50 57.41	12.691	18 32 45.9	43.95	21 49.4
23	13 31 41.61	11.407	7 30 2.4	65.71	21 24.0	23	15 56 2.61	12.739	18 50 6.1	42.70	21 50.6
24	13 36 15.79	11.439	7 56 16.1	65.42	21 24.6	24	16 1 8.95	12.786	19 6 56.3	41.43	21 51.8
25	13 40 50.78	11.473	8 22 22.4	65.09	21 25.3	25	16 6 16.43	12.833	19 23 15.6	40.14	21 53.0
26	13 45 26.58	+ 11.509	- 8 48 20.5	- 64.73	21 26.0	26	16 11 25.01	+ 12.880	- 19 39 3.5	- 38.82	21 54.2
27	13 50 3.23	11.546	9 14 9.6	64.34	21 26.7	27	16 16 34.69	12.926	19 54 19.2	37.48	21 55.4
28	13 54 40.74	11.583	9 39 49.0	63.92	21 27.4	28	16 21 45.44	12.971	20 9 2.0	36.10	21 56.7
29	13 59 19.15	11.621	10 5 17.9	63.47	21 28.1	29	16 26 57.24	13.014	20 23 11.4	34.69	21 58.0
30	14 3 58.47	11.659	10 30 35.4	62.98	21 28.8	30	16 32 10.06	13.056	20 36 46.7	33.25	21 59.3
31	14 8 38.74	+ 11.698	- 10 55 40.8	- 62.46	21 29.5	31	16 37 23.88	+ 13.096	- 20 49 47.2	- 31.79	22 0.6
32	14 13 19.97	+ 11.738	- 11 20 33.3	- 61.91	21 30.3	32	16 42 38.67	+ 13.135	- 21 2 12.5	- 30.31	22 1.9
Day of the Month.						Day of the Month.					
	1st.	6th.	11th.	16th.	21st.		1st.	6th.	11th.	16th.	21st.
Semidiameter	"	"	"	"	"	Semidiameter	"	"	"	"	"
Hor. Parallax	8.12	7.87	7.64	7.42	7.22	Hor. Parallax	6.86	6.70	6.55	6.42	6.29
	8.36	8.10	7.85	7.64	7.43		7.06	6.90	6.75	6.61	6.48

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

GREENWICH MEAN TIME.													
JANUARY.						FEBRUARY.							
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.		
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.			
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m		
1	23 35 46.11	+ 6.373	- 3 9 51.1	+ 44.66	4 56.5	1	0 54 54.41	+ 6.423	+ 5 57 52.5	+ 42.74	4 13.5		
2	23 38 19.05	6.372	2 51 58.8	44.69	4 55.2	2	0 57 28.61	6.428	6 14 56.8	42.59	4 12.2		
3	23 40 51.98	6.372	2 34 5.8	44.72	4 53.8	3	1 0 2.94	6.433	6 31 57.4	42.44	4 10.8		
4	23 43 24.90	6.371	2 16 12.3	44.75	4 52.4	4	1 2 37.39	6.439	6 48 54.3	42.28	4 9.4		
5	23 45 57.82	6.371	1 58 18.5	44.76	4 51.0	5	1 5 11.99	6.445	7 5 47.2	42.12	4 8.0		
6	23 48 30.73	+ 6.371	- 1 40 24.5	+ 44.75	4 49.6	6	1 7 46.73	+ 6.450	+ 7 22 36.1	+ 41.95	4 6.7		
7	23 51 3.64	6.371	1 22 30.5	44.74	4 48.2	7	1 10 21.60	6.456	7 39 20.8	41.77	4 5.4		
8	23 53 36.55	6.371	1 4 36.6	44.73	4 46.8	8	1 12 56.62	6.462	7 56 1.1	41.59	4 4.0		
9	23 56 9.45	6.371	0 46 42.9	44.71	4 45.4	9	1 15 31.78	6.468	8 12 36.9	41.40	4 2.6		
10	23 58 42.35	6.371	0 28 49.7	44.69	4 44.0	10	1 18 7.09	6.474	8 29 8.1	41.20	4 1.2		
11	0 1 15.24	+ 6.371	- 0 10 57.2	+ 44.67	4 42.6	11	1 20 42.53	+ 6.480	+ 8 45 34.5	+ 41.00	3 59.9		
12	0 3 48.14	6.372	+ 0 6 54.6	44.64	4 41.2	12	1 23 18.12	6.486	9 1 56.0	40.79	3 58.5		
13	0 6 21.05	6.372	0 24 45.4	44.60	4 39.8	13	1 25 53.87	6.492	9 18 12.4	40.58	3 57.2		
14	0 8 53.96	6.372	0 42 35.2	44.55	4 38.4	14	1 28 29.78	6.499	9 34 23.7	40.36	3 55.8		
15	0 11 26.89	6.373	1 0 23.7	44.49	4 37.0	15	1 31 5.85	6.506	9 50 29.7	40.14	3 54.5		
16	0 13 59.84	+ 6.373	+ 1 18 10.9	+ 44.43	4 35.6	16	1 33 42.09	+ 6.513	+ 10 6 30.3	+ 39.92	3 53.1		
17	0 16 32.81	6.374	1 35 56.5	44.36	4 34.2	17	1 36 18.50	6.520	10 22 25.4	39.69	3 51.8		
18	0 19 5.81	6.375	1 53 40.5	44.29	4 32.8	18	1 38 55.09	6.528	10 38 14.8	39.45	3 50.4		
19	0 21 38.84	6.376	2 11 22.8	44.21	4 31.4	19	1 41 31.86	6.536	10 53 58.4	39.20	3 49.1		
20	0 24 11.91	6.377	2 29 3.1	44.13	4 30.0	20	1 44 8.81	6.544	11 9 36.2	38.95	3 47.8		
21	0 26 45.03	+ 6.379	+ 2 46 41.4	+ 44.05	4 28.6	21	1 46 45.96	+ 6.552	+ 11 25 8.0	+ 38.70	3 46.4		
22	0 29 18.21	6.382	3 4 17.6	43.96	4 27.2	22	1 49 23.30	6.560	11 40 33.7	38.44	3 45.1		
23	0 31 51.44	6.385	3 21 51.4	43.86	4 25.8	23	1 52 0.85	6.569	11 55 53.1	38.18	3 43.8		
24	0 34 24.73	6.388	3 39 22.8	43.76	4 24.4	24	1 54 38.61	6.576	12 11 6.3	37.92	3 42.5		
25	0 36 58.10	6.392	3 56 51.6	43.65	4 23.0	25	1 57 16.58	6.587	12 26 13.1	37.65	3 41.2		
26	0 39 31.56	+ 6.396	+ 4 14 17.8	+ 43.54	4 21.7	26	1 59 54.78	+ 6.596	+ 12 41 13.4	+ 37.37	3 39.9		
27	0 42 5.10	6.400	4 31 41.3	43.42	4 20.3	27	2 2 33.20	6.605	12 56 7.1	37.09	3 38.6		
28	0 44 38.74	6.404	4 49 1.8	43.30	4 18.9	28	2 5 11.85	6.615	13 10 54.0	36.81	3 37.3		
29	0 47 12.48	6.408	5 6 19.3	43.17	4 17.5	29	2 7 50.73	6.625	13 25 34.1	36.52	3 36.0		
30	0 49 46.34	6.413	5 23 33.7	43.03	4 16.1	30	2 10 29.85	6.635	13 40 7.2	36.23	3 34.8		
31	0 52 20.32	+ 6.418	+ 5 40 44.8	+ 42.89	4 14.8	31	2 13 9.21	+ 6.645	+ 13 54 33.3	+ 35.93	3 33.5		
32	0 54 54.41	+ 6.423	+ 5 57 52.5	+ 42.74	4 13.5	32	2 15 48.80	+ 6.655	+ 14 8 52.2	+ 35.63	3 32.2		
Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.	5th.	10th.	15th.	20th.	25th.
Semidiameter.	3.68	3.58	3.48	3.38	3.29	3.21	3.13	Semidiameter	3.05	2.98	2.90	2.83	2.77
Hor. Parallax.	6.42	6.23	6.05	5.89	5.74	5.59	5.45	Hor. Parallax	5.31	5.18	5.06	4.94	4.83
NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.													

NOTE.—The sign + indicates north declinations; the sign - indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	2 10 29.85	+6.635	+13 40 7.2	+36.23	3 34.8	1	3 34 41.91	+6.949	+20 3 36.3	+24.96	2 56.7
2	2 13 9.21	6.645	13 54 33.3	35.93	3 33.5	2	3 37 28.82	6.959	20 13 30.3	24.53	2 55.5
3	2 15 48.80	6.655	14 8 52.2	35.63	3 32.2	3	3 40 15.96	6.969	20 23 14.0	24.10	2 54.3
4	2 18 28.64	6.665	14 23 3.9	35.32	3 30.9	4	3 43 3.32	6.979	20 32 47.4	23.67	2 53.2
5	2 21 8.71	6.675	14 37 8.1	35.01	3 29.6	5	3 45 50.91	6.988	20 42 10.4	23.24	2 52.1
6	2 23 49.02	+6.685	+14 51 4.8	+34.70	3 28.4	6	3 48 38.72	+6.997	+20 51 23.0	+22.80	2 50.9
7	2 26 29.57	6.694	15 4 53.8	34.38	3 27.1	7	3 51 26.74	7.006	21 0 24.9	22.36	2 49.8
8	2 29 10.36	6.704	15 18 35.1	34.06	3 25.8	8	3 54 14.96	7.014	21 9 16.2	21.92	2 48.7
9	2 31 51.38	6.714	15 32 8.4	33.73	3 24.6	9	3 57 3.39	7.022	21 17 56.8	21.47	2 47.6
10	2 34 32.64	6.724	15 45 33.7	33.39	3 23.3	10	3 59 52.02	7.030	21 26 26.6	21.02	2 46.5
11	2 37 14.14	+6.734	+15 58 50.8	+33.04	3 22.1	11	4 2 40.85	+7.038	+21 34 45.5	+20.56	2 45.3
12	2 39 55.88	6.744	16 11 59.7	32.70	3 20.8	12	4 5 29.86	7.046	21 42 53.4	20.10	2 44.2
13	2 42 37.85	6.754	16 25 0.3	32.35	3 19.6	13	4 8 19.06	7.054	21 50 50.3	19.64	2 43.1
14	2 45 20.07	6.764	16 37 52.5	32.00	3 18.3	14	4 11 8.43	7.061	21 58 36.2	19.18	2 42.0
15	2 48 2.52	6.774	16 50 36.1	31.64	3 17.1	15	4 13 57.98	7.068	22 6 11.0	18.72	2 40.9
16	2 50 45.21	+6.784	+17 3 10.9	+31.27	3 15.9	16	4 16 47.70	+7.075	+22 13 34.5	+18.25	2 39.7
17	2 53 28.15	6.794	17 15 37.0	30.90	3 14.6	17	4 19 37.59	7.082	22 20 46.8	17.78	2 38.6
18	2 56 11.33	6.804	17 27 54.2	30.53	3 13.4	18	4 22 27.64	7.089	22 27 47.7	17.31	2 37.5
19	2 58 54.75	6.814	17 40 2.5	30.16	3 12.2	19	4 25 17.85	7.096	22 34 37.3	16.83	2 36.4
20	3 1 38.42	6.824	17 52 1.8	29.78	3 11.0	20	4 28 8.22	7.102	22 41 15.6	16.36	2 35.3
21	3 4 22.33	+6.835	+18 3 51.9	+29.40	3 9.8	21	4 30 58.74	+7.108	+22 47 42.5	+15.88	2 34.2
22	3 7 6.49	6.845	18 15 32.7	29.01	3 8.6	22	4 33 49.41	7.114	22 53 57.9	15.40	2 33.1
23	3 9 50.90	6.855	18 27 4.3	28.62	3 7.4	23	4 36 40.22	7.120	23 0 1.8	14.92	2 32.0
24	3 12 35.56	6.866	18 38 26.5	28.23	3 6.2	24	4 39 31.17	7.126	23 5 54.2	14.44	2 30.9
25	3 15 20.47	6.876	18 49 39.3	27.83	3 5.0	25	4 42 22.27	7.132	23 11 35.0	13.96	2 29.8
26	3 18 5.64	+6.887	+19 0 42.5	+27.43	3 3.8	26	4 45 13.50	+7.137	+23 17 4.1	+13.48	2 28.7
27	3 20 51.06	6.897	19 11 36.0	27.03	3 2.6	27	4 48 4.85	7.142	23 22 21.6	12.99	2 27.6
28	3 23 36.74	6.908	19 22 19.8	26.62	3 1.4	28	4 50 56.31	7.147	23 27 27.5	12.50	2 26.5
29	3 26 22.66	6.918	19 32 53.8	26.21	3 0.2	29	4 53 47.88	7.151	23 32 21.7	12.01	2 25.4
30	3 29 8.83	6.929	19 43 18.0	25.80	2 59.0	30	4 56 39.54	7.155	23 37 4.1	11.52	2 24.4
31	3 31 55.25	+6.939	+19 53 32.2	+25.38	2 57.9	31	4 59 31.30	+7.158	+23 41 34.6	+11.03	2 23.3
32	3 34 41.91	+6.949	+20 3 36.3	+24.96	2 56.7	32	5 2 23.14	+7.161	+23 45 53.3	+10.54	2 22.2
Day of the Month.						Day of the Month.					
1st. 6th. 11th. 16th. 21st. 26th. 31st.						5th. 10th. 15th. 20th. 25th. 30th.					
Semidiameter. 2.72 2.66 2.61 2.56 2.51 2.46 2.41						Semidiameter . . 2.36 2.32 2.29 2.26 2.23 2.20					
Hor. Parallax. 4.73 4.63 4.54 4.45 4.37 4.29 4.21						Hor. Parallax . . 4.14 4.07 4.01 3.95 3.89 3.83					

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign — indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	4 59 31.30	+7.158	+23 41 34.6	+11.03	2 23.3	1	6 28 15.67	+7.104	+24 22 43.7	-4.33	1 49.9
2	5 2 23.14	7.161	23 45 53.3	10.54	2 22.2	2	6 31 6.10	7.097	24 20 53.9	4.81	1 48.8
3	5 5 15.06	7.164	23 50 0.1	10.04	2 21.1	3	6 33 56.36	7.090	24 18 52.6	5.29	1 47.7
4	5 8 7.05	7.167	23 53 55.1	9.54	2 20.0	4	6 36 46.44	7.083	24 16 39.8	5.77	1 46.6
5	5 10 59.09	7.169	23 57 38.2	9.05	2 19.0	5	6 39 36.33	7.075	24 14 15.5	6.25	1 45.5
6	5 13 51.17	+7.171	+24 1 9.4	+8.55	2 17.9	6	6 42 26.02	+7.067	+24 11 39.8	-6.73	1 44.4
7	5 16 43.29	7.172	24 4 28.6	8.05	2 16.8	7	6 45 15.51	7.058	24 8 52.7	7.20	1 43.3
8	5 19 35.44	7.173	24 7 35.8	7.55	2 15.8	8	6 48 4.78	7.049	24 5 54.3	7.67	1 42.2
9	5 22 27.61	7.174	24 10 31.0	7.05	2 14.7	9	6 50 53.84	7.039	24 2 44.7	8.14	1 41.1
10	5 25 19.78	7.174	24 13 14.2	6.55	2 13.7	10	6 53 42.67	7.030	23 59 23.8	8.60	1 40.0
11	5 28 11.95	+7.174	+24 15 45.4	+6.05	2 12.6	11	6 56 31.27	+7.020	+23 55 51.8	-9.06	1 38.9
12	5 31 4.12	7.173	24 18 4.7	5.55	2 11.5	12	6 59 19.63	7.010	23 52 8.7	9.52	1 37.7
13	5 33 56.27	7.172	24 20 12.0	5.05	2 10.5	13	7 2 7.75	7.000	23 48 14.6	9.98	1 36.6
14	5 36 48.41	7.171	24 22 7.2	4.55	2 9.4	14	7 4 55.62	6.990	23 44 9.4	10.44	1 35.4
15	5 39 40.52	7.170	24 23 50.5	4.05	2 8.4	15	7 7 43.25	6.980	23 39 53.4	10.89	1 34.3
16	5 42 32.59	+7.169	+24 25 21.7	+3.55	2 7.3	16	7 10 30.62	+6.969	+23 35 26.6	-11.34	1 33.1
17	5 45 24.62	7.168	24 26 40.9	3.05	2 6.2	17	7 13 17.74	6.958	23 30 49.0	11.79	1 31.9
18	5 48 16.60	7.166	24 27 48.2	2.55	2 5.1	18	7 16 4.60	6.947	23 26 0.7	12.24	1 30.7
19	5 51 8.53	7.164	24 28 43.5	2.06	2 4.0	19	7 18 51.19	6.936	23 21 1.7	12.68	1 29.5
20	5 54 0.39	7.162	24 29 26.9	1.56	2 3.0	20	7 21 37.52	6.925	23 15 52.1	13.12	1 28.4
21	5 56 52.19	+7.159	+24 29 58.4	+1.06	2 2.0	21	7 24 23.57	+6.914	+23 10 32.0	-13.56	1 27.2
22	5 59 43.92	7.156	24 30 17.9	0.56	2 0.9	22	7 27 9.35	6.903	23 5 1.5	13.99	1 26.0
23	6 2 35.57	7.152	24 30 25.5	+0.07	1 59.8	23	7 29 54.86	6.891	22 59 20.6	14.42	1 24.8
24	6 5 27.14	7.148	24 30 21.3	-0.42	1 58.7	24	7 32 40.09	6.879	22 53 29.4	14.85	1 23.6
25	6 8 18.62	7.143	24 30 5.3	0.91	1 57.6	25	7 35 25.03	6.867	22 47 28.0	15.27	1 22.4
26	6 11 9.99	+7.139	+24 29 37.4	-1.40	1 56.5	26	7 38 9.68	+6.854	+22 41 16.4	-15.69	1 21.2
27	6 14 1.26	7.134	24 28 57.7	1.89	1 55.4	27	7 40 54.03	6.841	22 34 54.8	16.11	1 20.0
28	6 16 52.41	7.129	24 28 6.3	2.38	1 54.3	28	7 43 38.08	6.828	22 28 23.2	16.53	1 18.8
29	6 19 43.44	7.124	24 27 3.1	2.87	1 53.2	29	7 46 21.82	6.816	22 21 41.6	16.94	1 17.6
30	6 22 34.33	7.118	24 25 48.3	3.36	1 52.1	30	7 49 5.25	6.803	22 14 50.2	17.35	1 16.4
31	6 25 25.08	+7.111	+24 24 21.8	-3.85	1 51.0	31	7 51 48.37	+6.790	+22 7 49.1	-17.75	1 15.2
32	6 28 15.67	+7.104	+24 22 43.7	-4.33	1 49.9	32	7 54 31.16	+6.777	+22 0 38.4	-18.15	1 14.0

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.	Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . . .	2.17	2.14	2.11	2.09	2.07	2.05	Semidiameter . . .	2.03	2.01	1.99	1.98	1.96	1.95
Hor. Parallax . . .	3.78	3.73	3.69	3.65	3.61	3.57	Hor. Parallax . . .	3.54	3.51	3.48	3.45	3.42	3.40

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.									
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.				
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.					
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m				
1	7 51 48.37	+ 6.790	+22 7 49.1	- 17.75	1 15.2	1	9 13 19.63	+ 6.361	+17 17 42.3	- 28.44	0 34.5				
2	7 54 31.16	6.777	22 0 38.4	18.15	1 14.0	2	9 15 52.13	6.347	17 6 16.3	28.72	0 33.1				
3	7 57 13.63	6.763	21 53 18.1	18.55	1 12.8	3	9 18 24.31	6.334	16 54 43.7	29.00	0 31.7				
4	7 59 55.77	6.749	21 45 48.3	18.94	1 11.5	4	9 20 56.17	6.321	16 43 4.4	29.27	0 30.3				
5	8 2 37.58	6.735	21 38 9.1	19.33	1 10.3	5	9 23 27.71	6.308	16 31 18.6	29.54	0 28.9				
6	8 5 19.06	+ 6.721	+21 30 20.5	- 19.71	1 9.1	6	9 25 58.94	+ 6.295	+16 19 26.3	- 29.81	0 27.5				
7	8 8 0.20	6.707	21 22 22.7	20.09	1 7.8	7	9 28 29.85	6.282	16 7 27.8	30.07	0 26.1				
8	8 10 41.00	6.693	21 14 15.8	20.47	1 6.5	8	9 31 0.45	6.269	15 55 23.0	30.33	0 24.6				
9	8 13 21.46	6.679	21 5 59.8	20.85	1 5.2	9	9 33 30.75	6.256	15 43 12.1	30.58	0 23.2				
10	8 16 1.58	6.665	20 57 34.9	21.22	1 4.0	10	9 36 0.74	6.243	15 30 55.1	30.83	0 21.8				
11	8 18 41.36	+ 6.650	+20 49 1.1	- 21.59	1 2.7	11	9 38 30.44	+ 6.231	+15 18 32.2	- 31.08	0 20.3				
12	8 21 20.80	6.636	20 40 18.5	21.95	1 1.4	12	9 40 59.84	6.219	15 6 3.4	31.32	0 18.9				
13	8 23 59.89	6.622	20 31 27.3	22.31	1 0.1	13	9 43 28.96	6.207	14 53 28.8	31.56	0 17.4				
14	8 26 38.64	6.608	20 22 27.5	22.67	0 58.8	14	9 45 57.80	6.196	14 40 48.6	31.79	0 16.0				
15	8 29 17.06	6.594	20 13 19.3	23.02	0 57.5	15	9 48 26.37	6.185	14 28 2.8	32.02	0 14.5				
16	8 31 55.14	+ 6.580	+20 4 2.6	- 23.37	0 56.2	16	9 50 54.66	+ 6.174	+14 15 11.3	- 32.25	0 13.0				
17	8 34 32.89	6.566	19 54 37.5	23.72	0 54.9	17	9 53 22.69	6.163	14 2 14.5	32.48	0 11.5				
18	8 37 10.31	6.552	19 45 4.1	24.06	0 53.6	18	9 55 50.46	6.152	13 49 12.3	32.70	0 10.0				
19	8 39 47.39	6.538	19 35 22.6	24.40	0 52.2	19	9 58 17.98	6.141	13 36 4.8	32.92	0 8.6				
20	8 42 24.14	6.524	19 25 33.0	24.73	0 50.9	20	10 0 45.24	6.131	13 22 52.2	33.13	0 7.1				
21	8 45 0.57	+ 6.511	+19 15 35.4	- 25.06	0 49.6	21	10 3 12.26	+ 6.121	+13 9 34.5	- 33.34	0 5.6				
22	8 47 36.67	6.497	19 5 30.0	25.39	0 48.2	22	10 5 39.03	6.111	12 56 11.9	33.55	0 4.1				
23	8 50 12.44	6.484	18 55 16.8	25.71	0 46.9	23	10 8 5.56	6.101	12 42 44.4	33.75	0 2.6				
24	8 52 47.88	6.470	18 44 55.9	26.03	0 45.5	24	10 10 31.86	6.091	12 29 12.1	33.95	0 1.1				
25	8 55 23.00	6.456	18 34 27.3	26.34	0 44.2	25	10 12 57.92	6.081	12 15 35.1	34.14	23 58.0				
26	8 57 57.78	+ 6.443	+18 23 51.2	- 26.65	0 42.9	26	10 15 23.76	+ 6.071	+12 1 53.6	- 34.33	23 56.5				
27	9 0 32.24	6.429	18 13 7.7	26.96	0 41.5	27	10 17 49.37	6.062	11 48 7.5	34.51	23 55.0				
28	9 3 6.37	6.416	18 2 16.9	27.27	0 40.1	28	10 20 14.75	6.053	11 34 17.1	34.69	23 53.5				
29	9 5 40.17	6.402	17 51 18.8	27.57	0 38.7	29	10 22 39.91	6.044	11 20 22.4	34.86	23 52.0				
30	9 8 13.65	6.388	17 40 13.6	27.86	0 37.3	30	10 25 4.86	6.035	11 6 23.5	35.03	23 50.4				
31	9 10 46.80	+ 6.375	+17 29 1.4	- 28.15	0 35.9	31	10 27 29.59	+ 6.026	+10 52 20.6	- 35.20	23 48.9				
32	9 13 19.63	+ 6.361	+17 17 42.3	- 28.44	0 34.5	32	10 29 54.12	+ 6.017	+10 38 13.6	- 35.37	23 47.3				
Day of the Month.		4th.	9th.	14th.	19th.	24th.	29th.	Day of the Month.		3d.	8th.	13th.	18th.	23d.	28th.
		"	"	"	"	"	"			"	"	"	"	"	"
Semidiameter		1.94	1.93	1.92	1.91	1.91	1.90	Semidiameter		1.90	1.89	1.89	1.89	1.88	1.88
Hor. Parallax		3.38	3.36	3.34	3.33	3.32	3.31	Hor. Parallax		3.30	3.29	3.29	3.29	3.29	3.29

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	10 29 54.12	+ 6.017	+ 10 38 13.6	- 35.37	23 47.3	1	11 41 2.72	+ 5.876	+ 3 11 16.1	- 38.55	23 0.3
2	10 32 18.44	6.009	10 24 2.7	35.53	23 45.8	2	11 43 23.73	5.875	2 55 50.2	38.60	22 58.7
3	10 34 42.56	6.001	10 9 48.0	35.69	23 44.3	3	11 45 44.72	5.875	2 40 23.2	38.64	22 57.1
4	10 37 6.49	5.993	9 55 29.6	35.84	23 42.7	4	11 48 5.69	5.875	2 24 55.3	38.67	22 55.5
5	10 39 30.24	5.985	9 41 7.6	35.99	23 41.2	5	11 50 26.64	5.874	2 9 26.5	38.71	22 53.9
6	10 41 53.80	+ 5.977	+ 9 26 42.1	- 36.14	23 39.6	6	11 52 47.99	+ 5.874	+ 1 53 57.0	- 38.74	22 52.3
7	10 44 17.18	5.970	9 12 13.2	36.28	23 38.1	7	11 55 8.55	5.874	1 38 26.8	38.77	22 50.7
8	10 46 40.39	5.963	8 57 41.0	36.42	23 36.5	8	11 57 29.52	5.875	1 22 56.0	38.79	22 49.1
9	10 49 3.44	5.957	8 43 5.5	36.55	23 35.0	9	11 59 50.50	5.876	1 7 24.7	38.81	22 47.5
10	10 51 26.34	5.951	8 28 26.8	36.68	23 33.4	10	12 2 11.51	5.877	0 51 52.9	38.83	22 45.9
11	10 53 49.10	+ 5.945	+ 8 13 45.1	- 36.80	23 31.8	11	12 4 32.56	+ 5.878	+ 0 36 20.7	- 38.84	22 44.3
12	10 56 11.71	5.939	7 59 0.4	36.92	23 30.3	12	12 6 53.65	5.880	0 20 48.3	38.85	22 42.7
13	10 58 34.19	5.934	7 44 12.7	37.04	23 28.7	13	12 9 14.79	5.882	+ 0 5 15.7	38.86	22 41.1
14	11 0 56.54	5.929	7 29 22.2	37.15	23 27.2	14	12 11 35.98	5.884	- 0 10 17.0	38.86	22 39.5
15	11 3 18.78	5.924	7 14 28.9	37.26	23 25.6	15	12 13 57.24	5.887	0 25 49.8	38.86	22 37.9
16	11 5 40.90	+ 5.919	+ 6 59 32.9	- 37.37	23 24.0	16	12 16 18.57	+ 5.890	- 0 41 22.5	- 38.85	22 36.4
17	11 8 2.91	5.915	6 44 34.4	37.48	23 22.5	17	12 18 39.97	5.893	0 56 55.1	38.85	22 34.8
18	11 10 24.82	5.911	6 29 33.4	37.58	23 20.9	18	12 21 1.45	5.896	1 12 27.4	38.84	22 33.2
19	11 12 46.64	5.907	6 14 29.9	37.68	23 19.3	19	12 23 23.02	5.900	1 27 59.3	38.82	22 31.6
20	11 15 8.36	5.903	5 59 24.2	37.78	23 17.7	20	12 25 44.68	5.904	1 43 30.8	38.80	22 30.0
21	11 17 30.00	+ 5.900	+ 5 44 16.2	- 37.87	23 16.1	21	12 28 6.44	+ 5.908	- 1 59 1.7	- 38.77	22 28.5
22	11 19 51.56	5.897	5 29 6.1	37.96	23 14.6	22	12 30 28.30	5.913	2 14 31.9	38.74	22 26.9
23	11 22 13.04	5.894	5 13 54.0	38.04	23 13.0	23	12 32 50.26	5.917	2 30 1.4	38.70	22 25.3
24	11 24 34.45	5.891	4 58 40.0	38.12	23 11.4	24	12 35 12.33	5.922	2 45 30.0	38.66	22 23.8
25	11 26 55.79	5.888	4 43 24.1	38.19	23 9.8	25	12 37 34.52	5.927	3 0 57.7	38.62	22 22.2
26	11 29 17.07	+ 5.885	+ 4 28 6.5	- 38.26	23 8.2	26	12 39 56.83	+ 5.932	- 3 16 24.3	- 38.58	22 20.7
27	11 31 38.30	5.883	4 12 47.3	38.33	23 6.7	27	12 42 19.26	5.938	3 31 49.7	38.53	22 19.1
28	11 33 59.47	5.881	3 57 26.6	38.39	23 5.1	28	12 44 41.83	5.943	3 47 13.8	38.47	22 17.5
29	11 36 20.60	5.879	3 42 4.4	38.45	23 3.5	29	12 47 4.53	5.949	4 2 36.6	38.41	22 16.0
30	11 38 41.68	5.877	3 26 40.9	38.50	23 1.9	30	12 49 27.37	5.955	4 17 57.8	38.35	22 14.4
31	11 41 2.72	+ 5.876	+ 3 11 16.1	- 38.55	23 0.3	31	12 51 50.36	+ 5.961	- 4 33 17.5	- 38.28	22 12.9
32	11 43 23.73	+ 5.875	+ 2 55 50.2	- 38.60	22 58.7	32	12 54 13.50	+ 5.967	- 4 48 35.5	- 38.21	22 11.3

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter	1.89	1.90	1.90	1.91	1.91	1.92	Semidiameter	1.93	1.94	1.95	1.97	1.98	2.00
Hor. Parallax	3.30	3.30	3.31	3.32	3.33	3.35	Hor. Parallax	3.36	3.38	3.40	3.43	3.46	3.49

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	12 54 13.50	+ 5.967	- 4 48 35.5	- 38.21	22 11.3	1	14 7 29.29	+ 6.273	- 12 6 28.5	- 34.11	21 26.3
2	12 56 36.79	5.974	5 3 51.6	38.13	22 9.7	2	14 10 0.00	6.286	12 20 4.8	33.90	21 24.9
3	12 59 0.24	5.981	5 19 5.8	38.05	22 8.2	3	14 12 31.03	6.299	12 33 36.1	33.69	21 23.5
4	13 1 23.87	5.988	5 34 18.1	37.97	22 6.6	4	14 15 2.38	6.313	12 47 2.3	33.48	21 22.1
5	13 3 47.68	5.996	5 49 28.3	37.88	22 5.1	5	14 17 34.06	6.327	13 0 23.3	33.26	21 20.7
6	13 6 11.67	+ 6.004	- 6 4 36.3	- 37.79	22 3.5	6	14 20 6.07	+ 6.341	- 13 13 39.0	- 33.04	21 19.3
7	13 8 35.86	6.012	6 19 42.1	37.69	22 2.0	7	14 22 38.42	6.355	13 26 49.3	32.81	21 17.9
8	13 11 0.25	6.021	6 34 45.5	37.59	22 0.4	8	14 25 11.11	6.369	13 39 54.1	32.58	21 16.5
9	13 13 24.85	6.030	6 49 46.5	37.49	21 58.9	9	14 27 44.14	6.383	13 52 53.3	32.35	21 15.1
10	13 15 49.66	6.039	7 4 45.0	37.38	21 57.4	10	14 30 17.53	6.398	14 5 46.9	32.11	21 13.7
11	13 18 14.70	+ 6.048	- 7 19 40.9	- 37.27	21 55.9	11	14 32 51.27	+ 6.413	- 14 18 34.6	- 31.87	21 12.3
12	13 20 39.96	6.058	7 34 34.1	37.15	21 54.4	12	14 35 25.37	6.428	14 31 16.5	31.62	21 10.9
13	13 23 5.46	6.068	7 49 24.5	37.03	21 52.9	13	14 37 59.83	6.443	14 43 52.4	31.37	21 9.6
14	13 25 31.19	6.078	8 4 11.9	36.91	21 51.4	14	14 40 34.66	6.458	14 56 22.1	31.11	21 8.2
15	13 27 57.16	6.088	8 18 56.3	36.79	21 49.9	15	14 43 9.85	6.473	15 8 45.6	30.85	21 6.9
16	13 30 23.39	+ 6.098	- 8 33 37.7	- 36.66	21 48.4	16	14 45 45.40	+ 6.489	- 15 21 2.8	- 30.58	21 5.5
17	13 32 49.88	6.109	8 48 15.9	36.52	21 46.9	17	14 48 21.33	6.504	15 33 13.5	30.31	21 4.2
18	13 35 16.62	6.120	9 2 50.7	36.38	21 45.4	18	14 50 57.62	6.519	15 45 17.6	30.03	21 2.9
19	13 37 43.62	6.131	9 17 22.1	36.24	21 43.9	19	14 53 34.28	6.534	15 57 15.0	29.75	21 1.6
20	13 40 10.89	6.142	9 31 49.9	36.09	21 42.5	20	14 56 11.31	6.550	16 9 5.6	29.46	21 0.3
21	13 42 38.43	+ 6.153	- 9 46 14.0	- 35.94	21 41.0	21	14 58 48.71	+ 6.566	- 16 20 49.3	- 29.17	20 59.0
22	13 45 6.24	6.164	10 0 34.4	35.78	21 39.5	22	15 1 26.48	6.581	16 32 25.9	28.87	20 57.7
23	13 47 34.32	6.175	10 14 50.8	35.61	21 38.0	23	15 4 4.61	6.597	16 43 55.3	28.57	20 56.4
24	13 50 2.68	6.187	10 29 3.3	35.44	21 36.5	24	15 6 43.11	6.612	16 55 17.5	28.26	20 55.1
25	13 52 31.32	6.199	10 43 11.7	35.26	21 35.1	25	15 9 21.98	6.627	17 6 32.3	27.95	20 53.9
26	13 55 0.25	+ 6.211	- 10 57 15.8	- 35.08	21 33.6	26	15 12 1.21	+ 6.642	- 17 17 39.5	- 27.64	20 52.6
27	13 57 29.46	6.223	11 11 15.5	34.89	21 32.1	27	15 14 40.81	6.657	17 28 39.1	27.32	20 51.3
28	13 59 58.97	6.235	11 25 10.8	34.70	21 30.7	28	15 17 20.77	6.672	17 39 31.0	27.00	20 50.0
29	14 2 28.77	6.247	11 39 1.5	34.51	21 29.2	29	15 20 1.10	6.687	17 50 15.0	26.67	20 48.8
30	14 4 58.88	6.260	11 52 47.4	34.31	21 27.8	30	15 22 41.79	6.703	18 0 51.1	26.34	20 47.5
31	14 7 29.29	+ 6.273	- 12 6 28.5	- 34.11	21 26.3	31	15 25 22.85	+ 6.719	- 18 11 19.1	- 26.00	20 46.2
32	14 10 0.00	+ 6.286	- 12 20 4.8	- 33.90	21 24.9	32	15 28 4.29	+ 6.734	- 18 21 39.0	- 25.66	20 44.9
Day of the Month.						Day of the Month.					
1st. 6th. 11th. 16th. 21st. 26th.						1st. 6th. 11th. 16th. 21st. 26th. 31st.					
Semidiameter						Semidiameter					
Hor. Parallax						Hor. Parallax					

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	8 58 48.78	-0.959	+17 52 11.8	+4.50	14 17.2	1	8 43 34.57	-1.356	+18 58 12.4	+5.47	12 0.1
2	8 58 25.44	0.984	17 54 1.2	4.60	14 12.9	2	8 43 2.06	1.353	19 0 23.4	5.44	11 55.6
3	8 58 1.51	1.009	17 55 52.7	4.69	14 8.6	3	8 42 29.63	1.349	19 2 33.5	5.40	11 51.1
4	8 57 37.00	1.033	17 57 46.2	4.78	14 4.2	4	8 41 57.29	1.344	19 4 42.5	5.36	11 46.7
5	8 57 11.91	1.056	17 59 41.8	4.86	13 59.9	5	8 41 25.07	1.338	19 6 50.4	5.31	11 42.2
6	8 56 46.28	-1.079	+18 1 39.4	+4.94	13 55.5	6	8 40 53.01	-1.332	+19 8 57.2	+5.26	11 37.8
7	8 56 20.13	1.101	18 3 38.7	5.01	13 51.2	7	8 40 21.12	1.325	19 11 2.7	5.21	11 33.3
8	8 55 53.48	1.122	18 5 39.7	5.08	13 46.8	8	8 39 49.43	1.317	19 13 6.8	5.15	11 28.9
9	8 55 26.33	1.142	18 7 42.4	5.15	13 42.4	9	8 39 17.96	1.307	19 15 9.5	5.09	11 24.4
10	8 54 58.71	1.161	18 9 46.5	5.21	13 38.0	10	8 38 46.74	1.296	19 17 10.9	5.02	11 20.0
11	8 54 30.65	-1.179	+18 11 51.9	+5.26	13 33.6	11	8 38 15.79	-1.284	+19 19 10.6	+4.95	11 15.5
12	8 54 2.16	1.196	18 13 58.6	5.31	13 29.2	12	8 37 45.12	1.271	19 21 8.6	4.88	11 11.1
13	8 53 33.26	1.213	18 16 6.6	5.36	13 24.8	13	8 37 14.77	1.257	19 23 4.8	4.81	11 6.7
14	8 53 3.98	1.229	18 18 15.7	5.40	13 20.4	14	8 36 44.76	1.243	19 24 59.3	4.73	11 2.2
15	8 52 34.32	1.244	18 20 25.7	5.44	13 16.0	15	8 36 15.10	1.228	19 26 52.0	4.65	10 57.5
16	8 52 4.31	-1.258	+18 22 36.6	+5.48	13 11.5	16	8 35 45.81	-1.212	+19 28 42.7	+4.57	10 53.4
17	8 51 33.97	1.270	18 24 48.4	5.51	13 7.1	17	8 35 16.91	1.196	19 30 31.4	4.49	10 49.0
18	8 51 3.33	1.282	18 27 0.9	5.54	13 2.6	18	8 34 48.43	1.179	19 32 18.2	4.40	10 44.6
19	8 50 32.39	1.293	18 29 13.9	5.56	12 58.2	19	8 34 20.38	1.161	19 34 2.9	4.31	10 40.2
20	8 50 1.19	1.304	18 31 27.4	5.58	12 53.7	20	8 33 52.78	1.141	19 35 45.4	4.22	10 35.8
21	8 49 29.76	-1.314	+18 33 41.4	+5.59	12 49.3	21	8 33 25.65	-1.120	+19 37 25.7	+4.13	10 31.4
22	8 48 58.10	1.323	18 35 55.7	5.60	12 44.8	22	8 32 59.01	1.099	19 39 3.7	4.04	10 27.1
23	8 48 26.24	1.331	18 38 10.1	5.60	12 40.4	23	8 32 32.87	1.077	19 40 39.5	3.94	10 22.7
24	8 47 54.21	1.338	18 40 24.6	5.59	12 35.9	24	8 32 7.25	1.055	19 42 12.9	3.84	10 18.4
25	8 47 22.04	1.344	18 42 39.2	5.59	12 31.5	25	8 31 42.18	1.032	19 43 44.0	3.74	10 14.0
26	8 46 49.73	-1.349	+18 44 53.6	+5.58	12 27.0	26	8 31 17.67	-1.009	+19 45 12.7	+3.64	10 9.7
27	8 46 17.32	1.352	18 47 7.8	5.58	12 22.5	27	8 30 53.73	0.985	19 46 38.9	3.54	10 5.3
28	8 45 44.84	1.355	18 49 21.6	5.56	12 18.0	28	8 30 30.37	0.960	19 48 2.6	3.44	10 1.0
29	8 45 12.29	1.357	18 51 35.2	5.54	12 13.5	29	8 30 7.62	0.935	19 49 23.8	3.33	9 56.7
30	8 44 39.71	1.358	18 53 48.3	5.52	12 9.0	30	8 29 45.49	0.909	19 50 42.6	3.22	9 52.4
31	8 44 7.13	-1.358	+18 56 0.7	+5.50	12 4.6	31	8 29 24.00	-0.882	+19 51 58.7	+3.11	9 48.1
32	8 43 34.57	-1.356	+18 58 12.4	+5.47	12 0.1	32	8 29 3.17	-0.854	+19 53 12.1	+3.00	9 43.9
Day of the Month.		1st.	9th.	17th.	25th.	Day of the Month.		2d.	10th.	18th.	26th.
Semidiameter		21.22	21.50	21.69	21.79	Semidiameter		21.79	21.68	21.48	21.19
Horizontal Parallax		1.98	2.01	2.03	2.04	Horizontal Parallax		2.04	2.03	2.01	1.98

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	8 29 45.49	-0.909	+19 50 42.6	+3.22	9 52.4	1	8 24 19.46	+0.063	+20 8 46.0	-0.33	7 45.3
2	8 29 24.00	0.882	19 51 58.7	3.11	9 48.1	2	8 24 21.36	0.096	20 8 36.7	0.45	7 41.4
3	8 29 3.17	0.854	19 53 12.1	3.00	9 43.9	3	8 24 24.06	0.129	20 8 24.6	0.56	7 37.5
4	8 28 43.00	0.826	19 54 22.9	2.89	9 39.6	4	8 24 27.54	0.162	20 8 9.8	0.67	7 33.6
5	8 28 23.50	0.797	19 55 31.0	2.78	9 35.4	5	8 24 31.80	0.194	20 7 52.4	0.78	7 29.7
6	8 28 4.70	-0.768	+19 56 36.4	+2.67	9 31.1	6	8 24 36.83	+0.226	+20 7 32.3	-0.89	7 25.9
7	8 27 46.60	0.739	19 57 39.1	2.56	9 26.9	7	8 24 42.64	0.258	20 7 9.5	1.01	7 22.1
8	8 27 29.21	0.710	19 58 39.1	2.45	9 22.7	8	8 24 49.22	0.290	20 6 44.0	1.12	7 18.3
9	8 27 12.53	0.680	19 59 36.4	2.34	9 18.5	9	8 24 56.57	0.322	20 6 15.9	1.23	7 14.5
10	8 26 56.58	0.650	20 0 30.9	2.22	9 14.3	10	8 25 4.68	0.354	20 5 45.1	1.34	7 10.7
11	8 26 41.37	-0.619	+20 1 22.6	+2.10	9 10.1	11	8 25 13.55	+0.385	+20 5 11.7	-1.45	7 6.9
12	8 26 26.90	0.588	20 2 11.5	1.98	9 5.9	12	8 25 23.16	0.416	20 4 35.7	1.56	7 3.1
13	8 26 13.16	0.557	20 2 57.7	1.87	9 1.8	13	8 25 33.52	0.447	20 3 57.1	1.66	6 59.3
14	8 26 0.18	0.525	20 3 41.1	1.75	8 57.6	14	8 25 44.62	0.478	20 3 15.9	1.77	6 55.6
15	8 25 47.96	0.493	20 4 21.7	1.64	8 53.5	15	8 25 56.44	0.508	20 2 32.1	1.87	6 51.9
16	8 25 36.51	-0.461	+20 4 59.5	+1.52	8 49.4	16	8 26 8.98	+0.538	+20 1 45.8	-1.98	6 48.2
17	8 25 25.82	0.429	20 5 34.4	1.40	8 45.3	17	8 26 22.25	0.568	20 0 56.9	2.09	6 44.5
18	8 25 15.91	0.397	20 6 6.6	1.29	8 41.2	18	8 26 36.24	0.597	20 0 5.5	2.19	6 40.8
19	8 25 6.78	0.365	20 6 36.0	1.17	8 37.1	19	8 26 50.93	0.626	19 59 11.5	2.30	6 37.1
20	8 24 58.42	0.333	20 7 2.7	1.06	8 33.0	20	8 27 6.32	0.655	19 58 15.0	2.40	6 33.4
21	8 24 50.84	-0.300	+20 7 26.6	+0.94	8 29.0	21	8 27 22.40	+0.684	+19 57 16.1	-2.51	6 29.7
22	8 24 44.04	0.267	20 7 47.7	0.82	8 24.9	22	8 27 39.17	0.713	19 56 14.7	2.61	6 26.1
23	8 24 38.03	0.234	20 8 6.0	0.70	8 20.9	23	8 27 56.63	0.741	19 55 10.8	2.72	6 22.4
24	8 24 32.80	0.201	20 8 21.5	0.59	8 16.9	24	8 28 14.76	0.769	19 54 4.5	2.82	6 18.8
25	8 24 28.36	0.168	20 8 34.2	0.47	8 12.9	25	8 28 33.56	0.797	19 52 55.7	2.92	6 15.2
26	8 24 24.71	-0.135	+20 8 44.2	+0.36	8 8.9	26	8 28 53.04	+0.825	+19 51 44.4	-3.02	6 11.6
27	8 24 21.85	0.102	20 8 51.4	0.24	8 5.0	27	8 29 13.18	0.852	19 50 30.7	3.12	6 8.0
28	8 24 19.79	0.069	20 8 55.8	0.12	8 1.0	28	8 29 33.96	0.879	19 49 14.6	3.22	6 4.4
29	8 24 18.52	0.036	20 8 57.5	+0.01	7 57.1	29	8 29 55.39	0.906	19 47 56.0	3.32	6 0.8
30	8 24 18.04	-0.003	20 8 56.4	-0.11	7 53.1	30	8 30 17.47	0.933	19 46 35.0	3.42	5 57.3
31	8 24 18.35	+0.030	+20 8 52.6	-0.22	7 49.2	31	8 30 40.18	+0.959	+19 45 11.7	-3.52	5 53.7
32	8 24 19.46	+0.063	+20 8 46.0	-0.33	7 45.3	32	8 31 3.51	+0.985	+19 43 46.0	-3.62	5 50.2
Day of the Month.						Day of the Month.					
	5th.	13th.	21st.	29th.			6th.	14th.	22d.	30th.	
Semidiameter	20.84	20.44	20.00	19.53		Semidiameter	19.05	18.59	18.13	17.70	
Horizontal Parallax	1.95	1.91	1.87	1.83		Horizontal Parallax	1.78	1.74	1.70	1.66	

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	8 30 40.18	+0.959	+19 45 11.7	-3.52	5 53.7	1	8 46 54.50	+1.610	+18 43 29.0	-6.36	4 8.1
2	8 31 3.51	0.985	19 43 46.0	3.62	5 50.2	2	8 47 33.34	1.626	18 40 55.5	6.44	4 4.8
3	8 31 27.46	1.010	19 42 17.9	3.72	5 46.6	3	8 48 12.56	1.642	18 38 20.0	6.52	4 1.5
4	8 31 52.02	1.035	19 40 47.3	3.82	5 43.1	4	8 48 52.15	1.658	18 35 42.5	6.60	3 58.2
5	8 32 17.19	1.060	19 39 14.5	3.92	5 39.6	5	8 49 32.12	1.673	18 33 3.1	6.68	3 55.0
6	8 32 42.94	+1.085	+19 37 39.4	-4.01	5 36.1	6	8 50 12.45	+1.688	+18 30 21.7	-6.77	3 51.7
7	8 33 9.27	1.109	19 36 2.0	4.11	5 32.6	7	8 50 53.12	1.702	18 27 38.4	6.85	3 48.5
8	8 33 36.18	1.133	19 34 22.2	4.21	5 29.2	8	8 51 34.14	1.716	18 24 53.1	6.93	3 45.2
9	8 34 3.66	1.157	19 32 40.2	4.30	5 25.7	9	8 52 15.50	1.730	18 22 5.9	7.01	3 42.0
10	8 34 31.69	1.180	19 30 55.9	4.40	5 22.2	10	8 52 57.18	1.743	18 19 16.8	7.09	3 38.7
11	8 35 0.27	+1.203	+19 29 9.3	-4.49	5 18.7	11	8 53 39.18	+1.756	+18 16 25.8	-7.17	3 35.5
12	8 35 29.41	1.225	19 27 20.4	4.59	5 15.3	12	8 54 21.50	1.769	18 13 33.0	7.25	3 32.2
13	8 35 59.08	1.247	19 25 29.3	4.68	5 11.8	13	8 55 4.15	1.782	18 10 38.4	7.32	3 29.0
14	8 36 29.27	1.269	19 23 36.0	4.77	5 8.4	14	8 55 47.09	1.795	18 7 41.9	7.40	3 25.8
15	8 36 59.98	1.291	19 21 40.5	4.86	5 5.0	15	8 56 30.32	1.807	18 4 43.6	7.47	3 22.6
16	8 37 31.20	+1.312	+19 19 42.8	-4.95	5 1.6	16	8 57 13.84	+1.819	+18 1 43.5	-7.55	3 19.4
17	8 38 2.92	1.333	19 17 42.9	5.04	4 58.2	17	8 57 57.66	1.831	17 58 41.6	7.63	3 16.2
18	8 38 35.13	1.353	19 15 40.8	5.13	4 54.8	18	8 58 41.76	1.843	17 55 37.9	7.70	3 13.0
19	8 39 7.83	1.373	19 13 36.6	5.22	4 51.4	19	8 59 26.13	1.855	17 52 32.4	7.77	3 9.8
20	8 39 41.03	1.393	19 11 30.2	5.31	4 48.0	20	9 0 10.77	1.866	17 49 25.1	7.84	3 6.6
21	8 40 14.70	+1.413	+19 9 21.7	-5.40	4 44.6	21	9 0 55.68	+1.877	+17 46 16.0	-7.92	3 3.4
22	8 40 48.83	1.432	19 7 11.0	5.49	4 41.3	22	9 1 40.85	1.888	17 43 5.2	7.99	3 0.2
23	8 41 23.42	1.451	19 4 58.2	5.58	4 37.9	23	9 2 26.27	1.898	17 39 52.7	8.06	2 57.0
24	8 41 58.48	1.470	19 2 43.3	5.67	4 34.6	24	9 3 11.93	1.908	17 36 38.5	8.13	2 53.8
25	8 42 33.99	1.489	19 0 26.3	5.76	4 31.2	25	9 3 57.84	1.918	17 33 22.6	8.20	2 50.7
26	8 43 9.93	+1.507	+18 58 7.2	-5.84	4 27.9	26	9 4 43.99	+1.927	+17 30 5.0	-8.27	2 47.5
27	8 43 46.31	1.524	18 55 46.0	5.93	4 24.6	27	9 5 30.36	1.937	17 26 45.8	8.34	2 44.4
28	8 44 23.12	1.542	18 53 22.7	6.01	4 21.3	28	9 6 16.96	1.946	17 23 24.9	8.41	2 41.2
29	8 45 0.35	1.559	18 50 57.3	6.10	4 18.0	29	9 7 3.78	1.955	17 20 2.3	8.48	2 38.1
30	8 45 37.99	1.577	18 48 29.9	6.19	4 14.7	30	9 7 50.81	1.964	17 16 38.1	8.54	2 34.9
31	8 46 16.04	+1.594	+18 46 0.5	-6.27	4 11.4	31	9 8 38.04	+1.972	+17 13 12.3	-8.61	2 31.8
32	8 46 54.50	+1.610	+18 43 29.0	-6.36	4 8.1	32	9 9 25.47	+1.980	+17 9 44.9	-8.68	2 28.6

Day of the Month.				8th.	16th.	24th.	Day of the Month.				1st.	9th.	17th.	25th.
				"	"	"					"	"	"	"
Semidiameter				17.29	16.90	16.54	Semidiameter				16.23	15.94	15.68	15.46
Horizontal Parallax				1.62	1.58	1.54	Horizontal Parallax				1.52	1.49	1.47	1.45

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	9 8 38.04	+1.972	+17 13 12.3	- 8.61	2 31.8	1	9 34 13.78	+2.124	+15 15 21.3	-10.27	0 55.3
2	9 9 25.47	1.980	17 9 44.9	8.68	2 28.6	2	9 35 4.77	2.126	15 11 14.3	10.31	0 52.2
3	9 10 13.10	1.988	17 6 16.0	8.74	2 25.5	3	9 35 55.80	2.127	15 7 6.4	10.35	0 49.1
4	9 11 0.91	1.996	17 2 45.5	8.80	2 22.3	4	9 36 46.86	2.128	15 2 57.5	10.39	0 46.1
5	9 11 48.89	2.003	16 59 13.5	8.86	2 19.2	5	9 37 37.94	2.128	14 58 47.8	10.43	0 43.0
6	9 12 37.05	+2.010	+16 55 40.0	- 8.93	2 16.0	6	9 38 29.04	+2.129	+14 54 37.3	-10.46	0 39.9
7	9 13 25.38	2.017	16 52 5.0	8.99	2 12.9	7	9 39 20.15	2.129	14 50 25.9	10.50	0 36.8
8	9 14 13.87	2.024	16 48 28.5	9.05	2 9.7	8	9 40 11.28	2.130	14 46 13.7	10.53	0 33.7
9	9 15 2.51	2.030	16 44 50.6	9.11	2 6.6	9	9 41 2.42	2.131	14 42 0.7	10.56	0 30.6
10	9 15 51.31	2.036	16 41 11.3	9.17	2 3.5	10	9 41 53.56	2.131	14 37 47.0	10.59	0 27.5
11	9 16 40.26	+2.042	+16 37 30.6	- 9.23	2 0.4	11	9 42 44.70	+2.131	+14 33 32.5	-10.62	0 24.4
12	9 17 29.35	2.048	16 33 48.5	9.29	1 57.3	12	9 43 35.83	2.131	14 29 17.3	10.65	0 21.4
13	9 18 18.57	2.054	16 30 5.0	9.34	1 54.2	13	9 44 26.96	2.130	14 25 1.4	10.68	0 18.3
14	9 19 7.92	2.059	16 26 20.2	9.40	1 51.1	14	9 45 18.08	2.130	14 20 44.9	10.70	0 15.2
15	9 19 57.40	2.064	16 22 34.0	9.45	1 48.0	15	9 46 9.18	2.129	14 16 27.7	10.73	0 12.1
16	9 20 47.01	+2.069	+16 18 46.5	- 9.51	1 44.9	16	9 47 0.27	+2.128	+14 12 9.9	-10.76	0 9.1
17	9 21 36.73	2.074	16 14 57.7	9.57	1 41.8	17	9 47 51.34	2.127	14 7 51.5	10.78	0 6.0
18	9 22 26.56	2.079	16 11 7.6	9.62	1 38.7	18	9 48 42.38	2.126	14 3 32.5	10.80	0 2.9
19	9 23 16.51	2.084	16 7 16.2	9.67	1 35.6	19	9 49 33.39	2.125	13 59 13.0	10.82	23 56.7
20	9 24 6.57	2.088	16 3 23.5	9.72	1 32.5	20	9 50 24.37	2.123	13 54 52.9	10.84	23 53.6
21	9 24 56.73	+2.092	+15 59 29.6	- 9.77	1 29.4	21	9 51 15.31	+2.121	+13 50 32.3	-10.86	23 50.5
22	9 25 46.98	2.096	15 55 34.5	9.82	1 26.3	22	9 52 6.20	2.119	13 46 11.3	10.88	23 47.4
23	9 26 37.33	2.100	15 51 38.2	9.87	1 23.2	23	9 52 57.05	2.117	13 41 49.9	10.90	23 44.4
24	9 27 27.77	2.103	15 47 40.7	9.92	1 20.1	24	9 53 47.85	2.115	13 37 28.2	10.92	23 41.3
25	9 28 18.29	2.106	15 43 42.1	9.97	1 17.0	25	9 54 38.59	2.112	13 33 6.1	10.93	23 38.2
26	9 29 8.88	+2.109	+15 39 42.3	-10.02	1 13.9	26	9 55 29.26	+2.109	+13 28 43.6	-10.95	23 35.1
27	9 29 59.55	2.112	15 35 41.4	10.06	1 10.8	27	9 56 19.86	2.106	13 24 20.8	10.96	23 32.0
28	9 30 50.28	2.115	15 31 39.4	10.11	1 7.7	28	9 57 10.39	2.103	13 19 57.6	10.97	23 28.9
29	9 31 41.07	2.118	15 27 36.4	10.15	1 4.6	29	9 58 0.84	2.100	13 15 34.2	10.98	23 25.8
30	9 32 31.92	2.120	15 23 32.4	10.19	1 1.5	30	9 58 51.20	2.097	13 11 10.7	10.98	23 22.7
31	9 33 22.83	+2.122	+15 19 27.4	-10.23	0 58.4	31	9 59 41.48	+2.093	+13 6 47.1	-10.99	23 19.6
32	9 34 13.78	+2.124	+15 15 21.3	-10.27	0 55.3	32	10 0 31.67	+2.089	+13 2 23.3	-10.99	23 16.5

Day of the Month.	3d.	11th.	19th.	27th.	Day of the Month.	4th.	12th.	20th.	28th.
Semidiameter	15.27	15.11	14.98	14.87	Semidiameter	14.81	14.78	14.77	14.79
Horizontal Parallax	1.43	1.41	1.40	1.39	Horizontal Parallax	1.38	1.38	1.38	1.38

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	10 0 31.67	+2.089	+13 2 23.3	-10.99	23 16.5	1	10 24 32.95	+1.885	+10 52 9.4	-10.48	21 42.4
2	10 1 21.76	2.085	12 57 59.3	11.00	23 13.4	2	10 25 18.07	1.875	10 47 58.2	10.44	21 39.2
3	10 2 11.75	2.081	12 53 35.3	11.00	23 10.3	3	10 26 2.95	1.865	10 43 48.1	10.40	21 36.0
4	10 3 1.63	2.076	12 49 11.3	11.00	23 7.2	4	10 26 47.59	1.855	10 39 39.1	10.35	21 32.8
5	10 3 51.40	2.071	12 44 47.3	11.00	23 4.1	5	10 27 31.97	1.844	10 35 31.2	10.31	21 29.6
6	10 4 41.06	+2.066	+12 40 23.3	-11.00	23 1.0	6	10 28 16.09	+1.833	+10 31 24.4	-10.26	21 26.4
7	10 5 30.60	2.061	12 35 59.4	11.00	22 57.9	7	10 28 59.94	1.822	10 27 18.8	10.21	21 23.2
8	10 6 20.01	2.056	12 31 35.6	11.00	22 54.8	8	10 29 43.53	1.811	10 23 14.4	10.16	21 20.0
9	10 7 9.30	2.051	12 27 11.8	10.99	22 51.7	9	10 30 26.85	1.800	10 19 11.3	10.11	21 16.8
10	10 7 58.46	2.046	12 22 48.2	10.98	22 48.6	10	10 31 9.90	1.788	10 15 9.5	10.05	21 13.6
11	10 8 47.48	+2.040	+12 18 24.8	-10.97	22 45.5	11	10 31 52.67	+1.776	+10 11 9.0	-9.99	21 10.4
12	10 9 36.37	2.034	12 14 1.7	10.96	22 42.3	12	10 32 35.16	1.764	10 7 9.9	9.93	21 7.1
13	10 10 25.12	2.028	12 9 38.8	10.95	22 39.2	13	10 33 17.35	1.752	10 3 12.3	9.87	21 3.9
14	10 11 13.72	2.022	12 5 16.2	10.94	22 36.1	14	10 33 59.25	1.740	9 59 16.1	9.81	21 0.6
15	10 12 2.17	2.016	12 0 53.9	10.92	22 33.0	15	10 34 40.85	1.727	9 55 21.4	9.74	20 57.4
16	10 12 50.47	+2.009	+11 56 31.9	-10.91	22 29.8	16	10 35 22.14	+1.714	+9 51 28.2	-9.68	20 54.1
17	10 13 38.61	2.002	11 52 10.3	10.89	22 26.7	17	10 36 3.11	1.701	9 47 36.7	9.61	20 50.9
18	10 14 26.59	1.995	11 47 49.1	10.87	22 23.5	18	10 36 43.77	1.688	9 43 46.9	9.54	20 47.6
19	10 15 14.39	1.988	11 43 28.4	10.85	22 20.4	19	10 37 24.11	1.674	9 39 58.7	9.47	20 44.4
20	10 16 2.02	1.981	11 39 8.2	10.83	22 17.2	20	10 38 4.12	1.660	9 36 12.2	9.39	20 41.1
21	10 16 49.48	+1.973	+11 34 48.4	-10.81	22 14.1	21	10 38 43.78	+1.646	+9 32 27.6	-9.32	20 37.8
22	10 17 36.75	1.965	11 30 29.2	10.79	22 10.9	22	10 39 23.09	1.631	9 28 44.8	9.24	20 34.5
23	10 18 23.83	1.957	11 26 10.7	10.76	22 7.8	23	10 40 2.06	1.616	9 25 3.9	9.16	20 31.2
24	10 19 10.71	1.949	11 21 52.8	10.73	22 4.6	24	10 40 40.67	1.601	9 21 25.0	9.08	20 27.9
25	10 19 57.39	1.941	11 17 35.6	10.70	22 1.5	25	10 41 18.91	1.586	9 17 48.1	8.99	20 24.6
26	10 20 43.87	+1.932	+11 13 19.1	-10.67	21 58.3	26	10 41 56.78	+1.570	+9 14 13.2	-8.91	20 21.3
27	10 21 30.13	1.923	11 9 3.4	10.63	21 55.1	27	10 42 34.28	1.554	9 10 40.3	8.82	20 18.0
28	10 22 16.17	1.914	11 4 48.6	10.60	21 51.9	28	10 43 11.39	1.538	9 7 9.6	8.73	20 14.7
29	10 23 1.99	1.905	11 0 34.6	10.56	21 48.8	29	10 43 48.11	1.522	9 3 41.1	8.64	20 11.4
30	10 23 47.59	1.895	10 56 21.5	10.52	21 45.6	30	10 44 24.43	1.506	9 0 14.9	8.54	20 8.0
31	10 24 32.95	+1.885	+10 52 9.4	-10.48	21 42.4	31	10 45 0.36	+1.489	+8 56 50.9	-8.45	20 4.7
32	10 25 18.07	+1.875	+10 47 58.2	-10.44	21 39.2	32	10 45 35.88	+1.472	+8 53 29.2	-8.35	20 1.3
Day of the Month.						Day of the Month.					
5th. 18th. 21st. 29th.						7th. 15th. 28d. 31st.					
Semidiameter 14.85 14.93 15.05 15.20						Semidiameter 15.38 15.60 15.85 16.13					
Horizontal Parallax 1.39 1.40 1.41 1.42						Horizontal Parallax 1.44 1.46 1.48 1.51					

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.											
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.						
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.							
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m						
1	10 45 35.88	+1.472	+8 53 29.2	-8.35	20 1.3	1	10 59 41.76	+0.837	+7 34 34.7	-4.50	18 17.2						
2	10 46 10.98	1.455	8 50 10.0	8.25	19 58.0	2	11 0 1.55	0.812	7 32 48.7	4.34	18 13.6						
3	10 46 45.66	1.437	8 46 53.2	8.15	19 54.6	3	11 0 20.73	0.787	7 31 6.5	4.18	18 10.0						
4	10 47 19.93	1.419	8 43 38.8	8.04	19 51.3	4	11 0 39.29	0.761	7 29 28.2	4.02	18 6.4						
5	10 47 53.76	1.401	8 40 26.9	7.94	19 47.9	5	11 0 57.23	0.735	7 27 53.7	3.86	18 2.7						
6	10 48 27.15	+1.383	+8 37 17.6	-7.83	19 44.5	6	11 1 14.56	+0.709	+7 26 23.1	-3.69	17 59.1						
7	10 49 0.10	1.364	8 34 10.9	7.72	19 41.1	7	11 1 31.25	0.682	7 24 56.5	3.53	17 55.4						
8	10 49 32.62	1.345	8 31 6.9	7.61	19 37.7	8	11 1 47.30	0.655	7 23 33.9	3.36	17 51.7						
9	10 50 4.68	1.326	8 28 5.5	7.50	19 34.3	9	11 2 2.71	0.628	7 22 15.3	3.19	17 48.0						
10	10 50 36.28	1.307	8 25 6.9	7.38	19 30.9	10	11 2 17.49	0.601	7 21 0.7	3.02	17 44.3						
11	10 51 7.41	+1.288	+8 22 11.1	-7.27	19 27.5	11	11 2 31.61	+0.574	+7 19 50.2	-2.85	17 40.6						
12	10 51 38.08	1.268	8 19 18.0	7.15	19 24.1	12	11 2 45.07	0.547	7 18 43.9	2.68	17 36.9						
13	10 52 8.27	1.248	8 16 27.8	7.03	19 20.6	13	11 2 57.87	0.519	7 17 41.8	2.50	17 33.2						
14	10 52 37.96	1.227	8 13 40.6	6.90	19 17.2	14	11 3 10.01	0.491	7 16 43.8	2.33	17 29.5						
15	10 53 7.16	1.206	8 10 56.4	6.78	19 13.7	15	11 3 21.47	0.463	7 15 50.1	2.15	17 25.7						
16	10 53 35.87	+1.185	+8 8 15.1	-6.65	19 10.3	16	11 3 32.25	+0.435	+7 15 0.7	-1.97	17 21.9						
17	10 54 4.07	1.164	8 5 36.9	6.52	19 6.8	17	11 3 42.34	0.406	7 14 15.6	1.79	17 18.1						
18	10 54 31.75	1.143	8 3 1.9	6.39	19 3.3	18	11 3 51.75	0.377	7 13 34.7	1.61	17 14.3						
19	10 54 58.91	1.121	8 0 30.1	6.25	18 59.8	19	11 4 0.46	0.348	7 12 58.3	1.43	17 10.5						
20	10 55 25.56	1.099	7 58 1.5	6.12	18 56.3	20	11 4 8.47	0.319	7 12 26.3	1.25	17 6.7						
21	10 55 51.66	+1.077	+7 55 36.2	-5.98	18 52.8	21	11 4 15.78	+0.290	+7 11 58.7	-1.06	17 2.9						
22	10 56 17.22	1.054	7 53 14.3	5.84	18 49.3	22	11 4 22.39	0.260	7 11 35.4	0.88	16 59.1						
23	10 56 42.23	1.031	7 50 55.7	5.70	18 45.7	23	11 4 28.28	0.231	7 11 16.7	0.70	16 55.2						
24	10 57 6.69	1.008	7 48 40.5	5.55	18 42.2	24	11 4 33.46	0.201	7 11 2.4	0.51	16 51.4						
25	10 57 30.58	0.984	7 46 28.8	5.41	18 38.6	25	11 4 37.93	0.171	7 10 52.6	0.32	16 47.5						
26	10 57 53.90	+0.960	+7 44 20.7	-5.26	18 35.1	26	11 4 41.68	+0.141	+7 10 47.3	-0.13	16 43.7						
27	10 58 16.65	0.936	7 42 16.2	5.11	18 31.5	27	11 4 44.71	0.111	7 10 46.5	+0.06	16 39.8						
28	10 58 38.82	0.912	7 40 15.3	4.96	18 28.0	28	11 4 47.02	0.081	7 10 50.2	0.25	16 35.9						
29	10 59 0.39	0.887	7 38 18.0	4.80	18 24.4	29	11 4 48.61	0.051	7 10 58.4	0.44	16 32.0						
30	10 59 21.37	0.862	7 36 24.5	4.65	18 20.8	30	11 4 49.49	+0.021	7 11 11.0	0.62	16 28.1						
31	10 59 41.76	+0.837	+7 34 34.7	-4.50	18 17.2	31	11 4 49.64	-0.009	+7 11 28.2	+0.81	16 24.1						
32	11 0 1.55	+0.812	+7 32 48.7	-4.34	18 13.6	32	11 4 49.07	-0.039	+7 11 49.9	+1.00	16 20.2						
Day of the Month.					8th.	16th.	24th.	Day of the Month.					2d.	10th.	18th.	26th.	34th.
					"	"	"						"	"	"	"	"
Semidiameter					16.44	16.79	17.17	Semidiameter					17.57	18.00	18.44	18.89	19.34
Horizontal Parallax					1.54	1.57	1.60	Horizontal Parallax					1.64	1.68	1.72	1.77	1.81

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	23 33 43.79	+ 0.573	- 5 13 40.6	+ 4.18	4 54.0	1	23 43 11.65	+ 0.927	- 4 7 34.1	+ 6.31	3 1.5
2	23 33 57.70	0.586	5 11 59.3	4.26	4 50.3	2	23 43 34.02	0.936	4 5 2.1	6.36	2 58.0
3	23 34 11.94	0.599	5 10 16.0	4.35	4 46.6	3	23 43 56.59	0.945	4 2 28.8	6.41	2 54.4
4	23 34 26.50	0.613	5 8 30.7	4.43	4 42.9	4	23 44 19.36	0.953	3 59 54.4	6.46	2 50.8
5	23 34 41.39	0.627	5 6 43.5	4.51	4 39.3	5	23 44 42.33	0.961	3 57 18.9	6.50	2 47.3
6	23 34 56.62	+ 0.641	- 5 4 54.3	+ 4.59	4 35.6	6	23 45 5.51	+ 0.969	- 3 54 42.3	+ 6.55	2 43.8
7	23 35 12.16	0.654	5 3 3.1	4.67	4 31.9	7	23 45 28.87	0.977	3 52 4.6	6.60	2 40.2
8	23 35 28.02	0.667	5 1 10.0	4.75	4 28.2	8	23 45 52.41	0.985	3 49 25.9	6.64	2 36.6
9	23 35 44.19	0.680	4 59 15.0	4.83	4 24.5	9	23 46 16.12	0.992	3 46 46.1	6.68	2 33.1
10	23 36 0.66	0.692	4 57 18.2	4.91	4 20.8	10	23 46 40.01	0.999	3 44 5.3	6.72	2 29.6
11	23 36 17.42	+ 0.704	- 4 55 19.6	+ 4.98	4 17.1	11	23 47 4.08	+ 1.006	- 3 41 23.5	+ 6.76	2 26.0
12	23 36 34.47	0.717	4 53 19.1	5.06	4 13.5	12	23 47 28.31	1.013	3 38 40.9	6.80	2 22.5
13	23 36 51.82	0.729	4 51 16.8	5.13	4 9.9	13	23 47 52.70	1.020	3 35 57.4	6.84	2 19.0
14	23 37 9.45	0.741	4 49 12.8	5.20	4 6.2	14	23 48 17.24	1.026	3 33 13.0	6.88	2 15.5
15	23 37 27.36	0.753	4 47 7.1	5.27	4 2.6	15	23 48 41.95	1.032	3 30 27.8	6.91	2 11.9
16	23 37 45.56	+ 0.765	- 4 44 59.8	+ 5.34	3 59.0	16	23 49 6.80	+ 1.038	- 3 27 41.8	+ 6.94	2 8.4
17	23 38 4.04	0.776	4 42 50.8	5.41	3 55.4	17	23 49 31.79	1.044	3 24 55.0	6.97	2 4.9
18	23 38 22.79	0.787	4 40 40.2	5.48	3 51.8	18	23 49 56.92	1.050	3 22 7.3	7.00	2 1.4
19	23 38 41.80	0.798	4 38 28.0	5.55	3 48.2	19	23 50 22.20	1.056	3 19 19.0	7.03	1 57.9
20	23 39 1.08	0.809	4 36 14.2	5.61	3 44.6	20	23 50 47.61	1.061	3 16 30.0	7.06	1 54.4
21	23 39 20.62	+ 0.820	- 4 33 58.7	+ 5.67	3 41.0	21	23 51 13.14	+ 1.066	- 3 13 40.3	+ 7.09	1 50.9
22	23 39 40.42	0.831	4 31 41.8	5.74	3 37.4	22	23 51 38.80	1.071	3 10 49.9	7.12	1 47.4
23	23 40 0.47	0.841	4 29 23.4	5.80	3 33.8	23	23 52 4.58	1.076	3 7 59.0	7.15	1 43.9
24	23 40 20.77	0.851	4 27 3.5	5.86	3 30.2	24	23 52 30.48	1.081	3 5 7.5	7.17	1 40.4
25	23 40 41.31	0.861	4 24 42.1	5.92	3 26.6	25	23 52 56.49	1.086	3 2 15.4	7.19	1 36.9
26	23 41 2.10	+ 0.871	- 4 22 19.3	+ 5.98	3 23.0	26	23 53 22.61	+ 1.091	- 2 59 22.6	+ 7.21	1 33.4
27	23 41 23.12	0.881	4 19 55.1	6.04	3 19.4	27	23 53 48.84	1.095	2 56 29.4	7.23	1 29.9
28	23 41 44.37	0.891	4 17 29.6	6.10	3 15.8	28	23 54 15.17	1.099	2 53 35.8	7.25	1 26.4
29	23 42 5.86	0.900	4 15 2.7	6.16	3 12.3	29	23 54 41.60	1.103	2 50 41.7	7.27	1 22.9
30	23 42 27.57	0.909	4 12 34.4	6.21	3 8.7	30	23 55 8.12	1.107	2 47 47.1	7.28	1 19.4
31	23 42 49.50	+ 0.918	- 4 10 4.9	+ 6.26	3 5.1	31	23 55 34.73	+ 1.111	- 2 44 52.2	+ 7.30	1 15.9
32	23 43 11.65	+ 0.927	- 4 7 34.1	+ 6.31	3 1.5	32	23 56 1.42	+ 1.114	- 2 41 56.9	+ 7.32	1 12.4
Day of the Month.						Day of the Month.					
1st. 9th. 17th. 25th.						2d. 10th. 18th. 26th.					
Semidiameter 7.98 7.87 7.78 7.71						Semidiameter 7.64 7.57 7.52 7.48					
Horizontal Parallax 0.90 0.89 0.88 0.87						Horizontal Parallax 0.86 0.85 0.85 0.84					

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	23 55 8.12	+ 1.107	- 2 47 47.1	+ 7.88	1 19.4	1	0 9 12.13	+ 1.135	- 1 16 44.7	+ 7.22	23 28.0
2	23 55 34.73	1.111	2 44 52.2	7.30	1 15.9	2	0 9 39.36	1.133	1 13 51.6	7.20	23 24.6
3	23 56 1.42	1.114	2 41 56.9	7.32	1 12.4	3	0 10 6.54	1.131	1 10 59.0	7.18	23 21.1
4	23 56 28.18	1.117	2 39 1.3	7.33	1 8.9	4	0 10 33.67	1.129	1 8 7.0	7.16	23 17.6
5	23 56 55.02	1.120	2 36 5.3	7.34	1 5.4	5	0 11 0.75	1.127	1 5 15.5	7.13	23 14.1
6	23 57 21.93	+ 1.123	- 2 33 9.1	+ 7.35	1 1.9	6	0 11 27.77	+ 1.125	- 1 2 24.6	+ 7.11	23 10.7
7	23 57 48.90	1.126	2 30 12.7	7.35	0 58.4	7	0 11 54.73	1.123	0 59 34.4	7.09	23 7.2
8	23 58 15.93	1.128	2 27 16.0	7.36	0 54.9	8	0 12 21.62	1.120	0 56 44.8	7.06	23 3.7
9	23 58 43.01	1.130	2 24 19.1	7.36	0 51.5	9	0 12 48.44	1.117	0 53 55.8	7.03	23 0.2
10	23 59 10.15	1.132	2 21 22.1	7.37	0 48.0	10	0 13 15.19	1.114	0 51 7.3	7.00	22 56.7
11	23 59 37.33	+ 1.134	- 2 18 25.0	+ 7.38	0 44.5	11	0 13 41.86	+ 1.111	- 0 48 19.6	+ 6.97	22 53.2
12	0 0 4.56	1.136	2 15 27.8	7.38	0 41.0	12	0 14 8.45	1.107	0 45 32.7	6.94	22 49.7
13	0 0 31.83	1.137	2 12 30.5	7.38	0 37.6	13	0 14 34.95	1.105	0 42 46.7	6.91	22 46.2
14	0 0 59.13	1.138	2 9 33.2	7.39	0 34.1	14	0 15 1.37	1.099	0 40 1.5	6.88	22 42.7
15	0 1 26.46	1.139	2 6 35.9	7.39	0 30.6	15	0 15 27.70	1.095	0 37 17.0	6.84	22 39.2
16	0 1 53.82	+ 1.140	- 2 3 38.6	+ 7.39	0 27.1	16	0 15 53.93	+ 1.091	- 0 34 33.4	+ 6.81	22 35.7
17	0 2 21.20	1.141	2 0 41.3	7.38	0 23.7	17	0 16 20.06	1.087	0 31 50.6	6.77	22 32.2
18	0 2 48.60	1.141	1 57 44.1	7.38	0 20.2	18	0 16 46.08	1.083	0 29 8.7	6.73	22 28.7
19	0 3 16.01	1.142	1 54 47.0	7.37	0 16.7	19	0 17 12.00	1.078	0 26 27.6	6.69	22 25.2
20	0 3 43.44	1.142	1 51 50.0	7.37	0 13.2	20	0 17 37.81	1.073	0 23 47.5	6.65	22 21.7
21	0 4 10.88	+ 1.143	- 1 48 53.2	+ 7.36	0 9.8	21	0 18 3.51	+ 1.068	- 0 21 8.4	+ 6.61	22 18.2
22	0 4 38.32	1.143	1 45 56.5	7.35	0 6.4	22	0 18 29.10	1.063	0 18 30.2	6.57	22 14.7
23	0 5 5.76	1.143	1 43 0.0	7.35	0 3.9	23	0 18 54.56	1.058	0 15 53.0	6.53	22 11.2
24	0 5 33.20	1.143	1 40 3.7	7.34	23 55.9	24	0 19 19.89	1.053	0 13 16.8	6.49	22 7.7
25	0 6 0.63	1.143	1 37 7.7	7.33	23 52.4	25	0 19 45.10	1.047	0 10 41.7	6.44	22 4.1
26	0 6 28.06	+ 1.143	- 1 34 11.9	+ 7.32	23 48.9	26	0 20 10.18	+ 1.042	- 0 8 7.7	+ 6.40	22 0.6
27	0 6 55.47	1.142	1 31 16.5	7.31	23 45.4	27	0 20 35.13	1.036	0 5 34.8	6.35	21 57.1
28	0 7 22.86	1.141	1 28 21.4	7.30	23 41.9	28	0 20 59.93	1.030	0 3 3.0	6.30	21 53.6
29	0 7 50.22	1.140	1 25 26.6	7.28	23 38.5	29	0 21 24.58	1.024	- 0 0 32.3	6.25	21 50.0
30	0 8 17.56	1.139	1 22 32.2	7.26	23 35.0	30	0 21 49.09	1.018	+ 0 1 57.2	6.20	21 46.5
31	0 8 44.86	+ 1.137	- 1 19 38.2	+ 7.24	23 31.5	31	0 22 13.44	+ 1.012	+ 0 4 25.4	+ 6.15	21 43.0
32	0 9 12.13	+ 1.135	- 1 16 44.7	+ 7.22	23 28.0	32	0 22 37.63	+ 1.005	+ 0 6 52.4	+ 6.10	21 39.5

Day of the Month.	5th.	13th.	21st.	29th.	Day of the Month.	6th.	14th.	22d.	30th.
Semidiameter	"	"	"	"	Semidiameter	"	"	"	"
Horizontal Parallax	7.45	7.43	7.43	7.44	Horizontal Parallax	7.45	7.48	7.52	7.57
	0.84	0.84	0.84	0.84		0.84	0.84	0.85	0.85

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign — indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	0 22 13.44	+ 1.012	+ 0 4 25.4	+ 6.15	21 43.0	1	0 33 12.03	+ 0.735	+ 1 8 59.5	+ 4.13	19 52.0
2	0 22 37.63	1.005	0 6 52.4	6.10	21 39.5	2	0 33 29.53	0.724	1 10 37.4	4.05	19 48.3
3	0 23 1.66	0.998	0 9 18.2	6.05	21 35.9	3	0 33 46.76	0.713	1 12 13.3	3.97	19 44.7
4	0 23 25.52	0.991	0 11 42.8	6.00	21 32.4	4	0 34 3.72	0.701	1 13 47.3	3.88	19 41.0
5	0 23 49.21	0.984	0 14 6.0	5.94	21 28.9	5	0 34 20.40	0.689	1 15 19.3	3.80	19 37.4
6	0 24 12.73	+ 0.977	+ 0 16 27.8	+ 5.89	21 25.3	6	0 34 36.79	+ 0.677	+ 1 16 49.3	+ 3.72	19 33.7
7	0 24 36.08	0.970	0 18 48.3	5.83	21 21.7	7	0 34 52.89	0.665	1 18 17.3	3.64	19 30.0
8	0 24 59.25	0.962	0 21 7.5	5.77	21 18.2	8	0 35 8.70	0.653	1 19 43.3	3.55	19 26.3
9	0 25 22.23	0.954	0 23 25.2	5.71	21 14.6	9	0 35 24.23	0.641	1 21 7.4	3.46	19 22.6
10	0 25 45.02	0.946	0 25 41.5	5.65	21 11.1	10	0 35 39.46	0.629	1 22 29.4	3.38	19 18.9
11	0 26 7.62	+ 0.938	+ 0 27 56.4	+ 5.59	21 7.5	11	0 35 54.39	+ 0.617	+ 1 23 49.3	+ 3.30	19 15.2
12	0 26 30.02	0.930	0 30 9.8	5.53	21 4.0	12	0 36 9.02	0.604	1 25 7.1	3.21	19 11.5
13	0 26 52.23	0.922	0 32 21.7	5.47	21 0.4	13	0 36 23.35	0.591	1 26 22.8	3.12	19 7.8
14	0 27 14.24	0.913	0 34 32.1	5.41	20 56.8	14	0 36 37.37	0.578	1 27 36.5	3.03	19 4.1
15	0 27 36.04	0.904	0 36 41.0	5.34	20 53.2	15	0 36 51.08	0.565	1 28 48.0	2.94	19 0.4
16	0 27 57.64	+ 0.895	+ 0 38 48.4	+ 5.28	20 49.7	16	0 37 4.48	+ 0.552	+ 1 29 57.4	+ 2.85	18 56.7
17	0 28 19.03	0.886	0 40 54.2	5.22	20 46.1	17	0 37 17.58	0.539	1 31 4.7	2.76	18 53.0
18	0 28 40.20	0.877	0 42 58.4	5.15	20 42.5	18	0 37 30.35	0.526	1 32 9.9	2.67	18 49.3
19	0 29 1.15	0.868	0 45 1.0	5.08	20 38.9	19	0 37 42.80	0.512	1 33 12.9	2.58	18 45.6
20	0 29 21.88	0.859	0 47 2.1	5.01	20 35.3	20	0 37 54.93	0.499	1 34 13.6	2.49	18 41.8
21	0 29 42.39	+ 0.850	+ 0 49 1.5	+ 4.94	20 31.7	21	0 38 6.73	+ 0.485	+ 1 35 12.1	+ 2.40	18 38.1
22	0 30 2.67	0.840	0 50 59.2	4.87	20 28.1	22	0 38 18.20	0.471	1 36 8.4	2.31	18 34.3
23	0 30 22.72	0.830	0 52 55.2	4.80	20 24.5	23	0 38 29.33	0.457	1 37 2.5	2.21	18 30.6
24	0 30 42.53	0.820	0 54 49.5	4.73	20 20.9	24	0 38 40.13	0.443	1 37 54.4	2.11	18 26.8
25	0 31 2.10	0.810	0 56 42.1	4.65	20 17.3	25	0 38 50.60	0.429	1 38 44.0	2.02	18 23.1
26	0 31 21.42	+ 0.800	+ 0 58 32.9	+ 4.58	20 13.7	26	0 39 0.72	+ 0.415	+ 1 39 31.3	+ 1.93	18 19.3
27	0 31 40.50	0.790	1 0 21.9	4.51	20 10.1	27	0 39 10.49	0.401	1 40 16.3	1.83	18 15.5
28	0 31 59.33	0.779	1 2 9.1	4.43	20 6.5	28	0 39 19.92	0.386	1 40 59.0	1.73	18 11.7
29	0 32 17.90	0.768	1 3 54.5	4.35	20 2.9	29	0 39 29.00	0.371	1 41 39.4	1.63	18 8.0
30	0 32 36.21	0.757	1 5 38.0	4.27	19 59.3	30	0 39 37.72	0.357	1 42 17.4	1.54	18 4.2
31	0 32 54.25	+ 0.746	+ 1 7 19.7	+ 4.20	19 55.6	31	0 39 46.09	+ 0.342	+ 1 42 53.1	+ 1.45	18 0.4
32	0 33 12.03	+ 0.735	+ 1 8 59.5	+ 4.13	19 52.0	32	0 39 54.11	+ 0.327	+ 1 43 26.5	+ 1.35	17 56.6
Day of the Month.						Day of the Month.					
8th. 16th. 24th.						1st. 9th. 17th. 25th.					
Semidiameter						Semidiameter					
Horizontal Parallax						Horizontal Parallax					
7.64 7.71 7.78						7.87 7.97 8.07 8.18					
0.86 0.87 0.88						0.89 0.90 0.91 0.92					

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	0 39 46.09	+0.342	+1 42 53.1	+1.45	18 0.4	1	0 41 3.26	-0.139	+1 41 44.6	-1.62	15 59.6
2	0 39 54.11	0.337	1 43 26.5	1.35	17 56.6	2	0 40 59.75	0.154	1 41 4.7	1.71	15 55.6
3	0 40 1.77	0.312	1 43 57.6	1.25	17 52.8	3	0 40 55.88	0.169	1 40 22.5	1.80	15 51.6
4	0 40 9.07	0.297	1 44 26.3	1.15	17 49.0	4	0 40 51.64	0.184	1 39 38.1	1.90	15 47.6
5	0 40 16.01	0.282	1 44 52.6	1.05	17 45.2	5	0 40 47.03	0.199	1 38 51.5	1.99	15 43.6
6	0 40 22.59	+0.267	+1 45 16.5	+0.95	17 41.3	6	0 40 42.06	-0.214	+1 38 2.7	-2.08	15 39.6
7	0 40 28.80	0.252	1 45 38.0	0.85	17 37.5	7	0 40 36.73	0.229	1 37 11.7	2.17	15 35.6
8	0 40 34.65	0.237	1 45 57.2	0.75	17 33.6	8	0 40 31.05	0.244	1 36 18.4	2.26	15 31.6
9	0 40 40.13	0.221	1 46 14.0	0.65	17 29.8	9	0 40 25.01	0.259	1 35 23.1	2.35	15 27.5
10	0 40 45.25	0.206	1 46 28.4	0.55	17 25.9	10	0 40 18.62	0.274	1 34 25.7	2.44	15 23.5
11	0 40 50.00	+0.191	+1 46 40.5	+0.45	17 22.1	11	0 40 11.88	-0.289	+1 33 26.2	-2.53	15 19.4
12	0 40 54.38	0.176	1 46 50.2	0.35	17 18.2	12	0 40 4.79	0.303	1 32 24.6	2.61	15 15.4
13	0 40 58.39	0.160	1 46 57.5	0.25	17 14.4	13	0 39 57.36	0.317	1 31 21.0	2.69	15 11.3
14	0 41 2.03	0.144	1 47 2.4	0.15	17 10.5	14	0 39 49.59	0.331	1 30 15.4	2.78	15 7.3
15	0 41 5.30	0.129	1 47 4.9	+0.05	17 6.6	15	0 39 41.48	0.345	1 29 7.8	2.86	15 3.2
16	0 41 8.20	+0.114	+1 47 5.1	-0.05	17 2.7	16	0 39 33.03	-0.359	+1 27 58.2	-2.94	14 59.1
17	0 41 10.72	0.098	1 47 2.9	0.15	16 58.8	17	0 39 24.24	0.373	1 26 46.7	3.02	14 55.0
18	0 41 12.87	0.082	1 46 58.3	0.25	16 54.9	18	0 39 15.13	0.386	1 25 33.3	3.10	14 50.9
19	0 41 14.64	0.066	1 46 51.3	0.34	16 51.0	19	0 39 5.70	0.400	1 24 18.0	3.18	14 46.8
20	0 41 16.03	0.051	1 46 41.9	0.44	16 47.0	20	0 38 55.95	0.413	1 23 0.8	3.25	14 42.7
21	0 41 17.04	+0.035	+1 46 30.1	-0.54	16 43.1	21	0 38 45.87	-0.426	+1 21 41.8	-3.32	14 38.6
22	0 41 17.68	0.019	1 46 16.0	0.64	16 39.2	22	0 38 35.49	0.439	1 20 21.0	3.39	14 34.5
23	0 41 17.94	+0.003	1 45 59.5	0.74	16 35.3	23	0 38 24.80	0.452	1 18 58.5	3.46	14 30.4
24	0 41 17.82	-0.013	1 45 40.6	0.84	16 31.4	24	0 38 13.80	0.464	1 17 34.3	3.53	14 26.3
25	0 41 17.32	0.029	1 45 19.3	0.94	16 27.5	25	0 38 2.50	0.476	1 16 8.3	3.60	14 22.2
26	0 41 16.45	-0.045	+1 44 55.6	-1.04	16 23.5	26	0 37 50.92	-0.488	+1 14 40.7	-3.67	14 18.1
27	0 41 15.20	0.061	1 44 29.6	1.14	16 19.6	27	0 37 39.05	0.500	1 13 11.6	3.74	14 13.9
28	0 41 13.56	0.077	1 44 1.2	1.24	16 15.6	28	0 37 26.90	0.512	1 11 40.9	3.81	14 9.8
29	0 41 11.55	0.092	1 43 30.5	1.33	16 11.6	29	0 37 14.47	0.523	1 10 8.6	3.87	14 5.6
30	0 41 9.16	0.108	1 42 57.5	1.43	16 7.6	30	0 37 1.78	0.534	1 8 34.9	3.93	14 1.5
31	0 41 6.40	-0.124	+1 42 22.2	-1.53	16 3.6	31	0 36 48.83	-0.545	+1 6 59.8	-3.99	13 57.3
32	0 41 3.26	-0.139	+1 41 44.6	-1.62	15 59.6	32	0 36 35.62	-0.556	+1 5 23.4	-4.05	13 53.2
Day of the Month.		8d.	11th.	19th.	27th.	Day of the Month.		4th.	12th.	20th.	28th.
Semidiameter		8.30	8.42	8.55	8.67	Semidiameter		8.78	8.89	8.99	9.07
Horizontal Parallax		0.93	0.95	0.96	0.97	Horizontal Parallax		0.99	1.00	1.01	1.02

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	0 36 35.62	-0.556	+1 5 23.4	-4.05	13 53.2	1	0 28 38.08	-0.719	+0 10 52.7	-4.68	11 47.2
2	0 36 22.15	0.566	1 3 45.6	4.10	13 49.0	2	0 28 20.83	0.719	0 9 0.6	4.66	11 43.0
3	0 36 8.46	0.576	1 2 6.6	4.15	13 44.9	3	0 28 3.59	0.718	0 7 8.9	4.64	11 38.8
4	0 35 54.54	0.585	1 0 26.3	4.20	13 40.7	4	0 27 46.38	0.717	0 5 17.6	4.62	11 34.6
5	0 35 40.39	0.594	0 58 44.8	4.25	13 36.6	5	0 27 29.21	0.715	0 3 27.0	4.60	11 30.4
6	0 35 26.01	-0.603	+0 57 2.2	-4.30	13 32.4	6	0 27 12.08	-0.713	+0 1 37.0	-4.57	11 26.2
7	0 35 11.43	0.612	0 55 18.6	4.35	13 28.2	7	0 26 54.99	0.711	-0 0 12.4	4.54	11 22.0
8	0 34 56.64	0.620	0 53 34.0	4.39	13 24.0	8	0 26 37.96	0.708	0 2 0.9	4.51	11 17.7
9	0 34 41.65	0.628	0 51 48.5	4.43	13 19.9	9	0 26 21.01	0.705	0 3 48.6	4.48	11 13.5
10	0 34 26.47	0.636	0 50 2.0	4.46	13 15.7	10	0 26 4.14	0.702	0 5 35.5	4.44	11 9.3
11	0 34 11.11	-0.644	+0 48 14.7	-4.49	13 11.5	11	0 25 47.34	-0.698	-0 7 21.6	-4.40	11 5.1
12	0 33 55.58	0.651	0 46 26.6	4.52	13 7.3	12	0 25 30.64	0.694	0 9 6.7	4.36	11 0.9
13	0 33 39.88	0.658	0 44 37.7	4.55	13 3.1	13	0 25 14.05	0.689	0 10 50.7	4.31	10 56.7
14	0 33 24.01	0.665	0 42 48.1	4.58	12 58.9	14	0 24 57.57	0.684	0 12 33.6	4.26	10 52.5
15	0 33 7.99	0.671	0 40 57.9	4.61	12 54.7	15	0 24 41.20	0.679	0 14 15.4	4.21	10 48.3
16	0 32 51.83	-0.677	+0 39 7.1	-4.63	12 50.5	16	0 24 24.96	-0.673	-0 15 56.0	-4.16	10 44.1
17	0 32 35.53	0.682	0 37 15.6	4.65	12 46.3	17	0 24 8.87	0.667	0 17 35.3	4.11	10 39.9
18	0 32 19.10	0.687	0 35 23.7	4.67	12 42.1	18	0 23 52.93	0.661	0 19 13.4	4.05	10 35.7
19	0 32 2.56	0.692	0 33 31.4	4.69	12 37.9	19	0 23 37.13	0.654	0 20 50.2	3.99	10 31.5
20	0 31 45.91	0.696	0 31 38.8	4.70	12 33.7	20	0 23 21.50	0.647	0 22 25.6	3.93	10 27.3
21	0 31 29.15	-0.700	+0 29 45.8	-4.71	12 29.5	21	0 23 6.05	-0.640	-0 23 59.4	-3.87	10 23.1
22	0 31 12.30	0.704	0 27 52.5	4.72	12 25.3	22	0 22 50.78	0.632	0 25 31.7	3.81	10 18.9
23	0 30 55.37	0.707	0 25 59.1	4.72	12 21.1	23	0 22 35.69	0.624	0 27 2.5	3.74	10 14.8
24	0 30 38.37	0.710	0 24 5.6	4.72	12 16.9	24	0 22 20.81	0.615	0 28 31.7	3.67	10 10.6
25	0 30 21.29	0.712	0 22 12.0	4.73	12 12.7	25	0 22 6.15	0.606	0 29 59.2	3.60	10 6.4
26	0 30 4.16	-0.714	+0 20 18.4	-4.73	12 8.4	26	0 21 51.70	-0.597	-0 31 24.9	-3.53	10 2.2
27	0 29 46.99	0.716	0 18 24.9	4.73	12 4.2	27	0 21 37.47	0.588	0 32 48.9	3.46	9 58.1
28	0 29 29.79	0.717	0 16 31.5	4.72	11 59.9	28	0 21 23.48	0.578	0 34 11.1	3.38	9 53.9
29	0 29 12.56	0.718	0 14 38.3	4.71	11 55.7	29	0 21 9.73	0.568	0 35 31.4	3.30	9 49.8
30	0 28 55.32	0.718	0 12 45.3	4.70	11 51.4	30	0 20 56.23	0.557	0 36 49.8	3.22	9 45.6
31	0 28 38.08	-0.719	+0 10 52.7	-4.68	11 47.2	31	0 20 42.98	-0.546	-0 38 6.3	-3.14	9 41.5
32	0 28 20.83	-0.719	+0 9 0.6	-4.66	11 43.0	32	0 20 30.00	-0.535	-0 39 20.8	-3.06	9 37.3

Day of the Month.	5th.	13th.	21st.	29th.	Day of the Month.	7th.	15th.	23d.	31st.
Semidiameter	9.14	9.19	9.23	9.25	Semidiameter	9.25	9.21	9.15	9.08
Horizontal Parallax	1.03	1.03	1.04	1.04	Horizontal Parallax	1.04	1.04	1.03	1.02

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ' "	"	h m		h m s	s	° ' "	"	h m
1	0 20 30.00	-0.535	-0 39 20.8	-3.06	9 37.3	1	0 16 29.80	-0.105	-0 58 42.9	-0.03	7 35.4
2	0 20 17.29	0.544	0 40 33.2	2.98	9 33.2	2	0 16 27.48	0.089	0 58 42.4	+0.08	7 31.5
3	0 20 4.85	0.512	0 41 43.5	2.89	9 29.0	3	0 16 25.55	0.073	0 58 39.2	0.19	7 27.5
4	0 19 52.69	0.500	0 42 51.8	2.80	9 24.9	4	0 16 24.02	0.056	0 58 33.4	0.30	7 23.6
5	0 19 40.82	0.488	0 43 57.9	2.71	9 20.8	5	0 16 22.88	0.039	0 58 25.0	0.41	7 19.6
6	0 19 29.25	-0.476	-0 45 1.8	-2.62	9 16.7	6	0 16 22.14	-0.022	-0 58 13.9	+0.52	7 15.7
7	0 19 17.98	0.463	0 46 3.6	2.53	9 12.6	7	0 16 21.80	-0.005	0 58 0.2	0.63	7 11.7
8	0 19 7.01	0.450	0 47 3.2	2.44	9 8.5	8	0 16 21.85	+0.011	0 57 43.9	0.74	7 7.8
9	0 18 56.35	0.437	0 48 0.5	2.35	9 4.4	9	0 16 22.30	0.028	0 57 24.9	0.85	7 3.9
10	0 18 46.01	0.424	0 48 55.5	2.25	9 0.3	10	0 16 23.16	0.044	0 57 3.3	0.96	7 0.0
11	0 18 35.99	-0.411	-0 49 48.2	-2.15	8 56.2	11	0 16 24.42	+0.061	-0 56 39.1	+1.06	6 56.1
12	0 18 26.28	0.397	0 50 38.6	2.05	8 52.1	12	0 16 26.07	0.078	0 56 12.3	1.17	6 52.2
13	0 18 16.91	0.383	0 51 26.7	1.95	8 48.0	13	0 16 28.11	0.094	0 55 42.9	1.28	6 48.3
14	0 18 7.88	0.369	0 52 12.4	1.85	8 43.9	14	0 16 30.55	0.111	0 55 10.8	1.39	6 44.4
15	0 17 59.19	0.355	0 52 55.6	1.75	8 39.8	15	0 16 33.40	0.127	0 54 36.2	1.50	6 40.5
16	0 17 50.84	-0.341	-0 53 36.4	-1.65	8 35.8	16	0 16 36.65	+0.144	-0 53 59.0	+1.60	6 36.6
17	0 17 42.84	0.326	0 54 14.7	1.55	8 31.7	17	0 16 40.29	0.161	0 53 19.2	1.71	6 32.7
18	0 17 35.20	0.311	0 54 50.5	1.45	8 27.7	18	0 16 44.32	0.178	0 52 36.7	1.82	6 28.9
19	0 17 27.92	0.296	0 55 23.8	1.35	8 23.6	19	0 16 48.76	0.194	0 51 51.7	1.93	6 25.0
20	0 17 21.00	0.281	0 55 54.7	1.24	8 19.6	20	0 16 53.59	0.210	0 51 4.2	2.04	6 21.2
21	0 17 14.45	-0.265	-0 56 23.0	-1.13	8 15.5	21	0 16 58.82	+0.226	-0 50 14.2	+2.14	6 17.3
22	0 17 8.27	0.250	0 56 48.7	1.02	8 11.5	22	0 17 4.45	0.243	0 49 21.6	2.25	6 13.5
23	0 17 2.46	0.234	0 57 11.9	0.91	8 7.4	23	0 17 10.47	0.260	0 48 26.5	2.35	6 9.6
24	0 16 57.03	0.218	0 57 32.5	0.79	8 3.4	24	0 17 16.88	0.276	0 47 28.9	2.45	6 5.8
25	0 16 51.98	0.202	0 57 50.4	0.68	7 59.4	25	0 17 23.68	0.293	0 46 28.8	2.56	6 2.0
26	0 16 47.32	-0.186	-0 58 5.7	-0.57	7 55.4	26	0 17 30.87	+0.309	-0 45 26.3	+2.66	5 58.2
27	0 16 43.04	0.170	0 58 18.4	0.46	7 51.4	27	0 17 38.45	0.325	0 44 21.3	2.76	5 54.4
28	0 16 39.14	0.154	0 58 28.6	0.35	7 47.4	28	0 17 46.41	0.341	0 43 13.9	2.86	5 50.6
29	0 16 35.63	0.138	0 58 36.0	0.24	7 43.4	29	0 17 54.75	0.356	0 42 4.1	2.96	5 46.8
30	0 16 32.52	0.122	0 58 40.8	0.13	7 39.4	30	0 18 3.47	0.371	0 40 51.8	3.06	5 43.1
31	0 16 29.80	-0.105	-0 58 42.9	-0.03	7 35.4	31	0 18 12.57	+0.387	-0 39 37.2	+3.16	5 39.3
32	0 16 27.48	-0.089	-0 58 42.4	+0.08	7 31.5	32	0 18 22.04	+0.402	-0 38 20.3	+3.25	5 35.5

Day of the Month.	8th.	16th.	24th.	Day of the Month.	2d.	10th.	18th.	26th.	34th.
Semidiameter	8.99	8.89	8.79	Semidiameter	8.67	8.55	8.43	8.32	8.20
Horizontal Parallax	1.01	1.00	0.99	Horizontal Parallax	0.98	0.97	0.95	0.94	0.92

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing or south declinations are decreasing. The sign - indicates that north declinations are decreasing or south declinations increasing.

GREENWICH MEAN TIME.

Month and Day.	Apparent Right Ascension.			Var. of R. A. for 1 Day.		Apparent Declination.			Var. of Decl. for 1 Day.		Meridian Passage.
	Noon.			Noon.		Noon.			Noon.		
	h	m	s	s	"	°	'	"	"	h		m
Jan. 1	18	55	3.48	+15.518		23	12	27.3	+19.92		0 16.0
5	18	56	5.59	15.528		23	11	6.9	20.24		0 1.8
9	18	57	7.63	15.481		23	9	45.4	20.50		23 42.9
13	18	58	9.37	15.381		23	8	22.9	20.67		23 28.2
17	18	59	10.61	15.230		23	7	0.0	20.74		23 13.5
21	19	0	11.15	+15.033		23	5	37.0	+20.74		22 58.8
25	19	1	10.81	14.788		23	4	14.1	20.66		22 44.0
29	19	2	9.39	14.493		23	2	51.7	20.49		22 29.3
Feb. 2	19	3	6.68	14.143		23	1	30.2	20.22		22 14.5
6	19	4	2.46	13.737		23	0	9.9	19.87		21 59.7
10	19	4	56.53	+13.289		22	58	51.2	+19.41		21 44.8
14	19	5	48.72	12.799		22	57	34.6	18.85		21 30.0
18	19	6	38.87	12.268		22	56	20.4	18.20		21 15.1
22	19	7	26.81	11.698		22	55	9.0	17.46		21 0.2
26	19	8	12.40	11.086		22	54	0.7	16.61		20 45.2
Mar. 1	19	8	55.45	+10.432		22	52	56.1	+15.66		20 30.1
5	19	9	35.81	9.742		22	51	55.4	14.65		20 15.1
9	19	10	13.34	9.017		22	50	58.9	13.55		20 0.0
13	19	10	47.91	8.265		22	50	7.0	12.36		19 44.8
17	19	11	19.43	7.489		22	49	20.0	11.11		19 29.6
21	19	11	47.79	+6.688		22	48	38.1	+9.80		19 14.3
25	19	12	12.91	5.869		22	48	1.6	8.42		18 59.0
29	19	12	34.71	5.088		22	47	30.7	6.99		18 43.6
Apr. 2	19	12	53.09	4.163		22	47	5.7	5.52		18 28.2
6	19	13	8.00	3.289		22	46	46.5	4.02		18 12.7
10	19	13	19.40	+2.414		22	46	33.5	+2.49		17 57.1
14	19	13	27.31	1.539		22	46	26.6	+0.97		17 41.5
18	19	13	31.71	+0.664		22	46	25.7	-0.55		17 25.9
22	19	13	32.62	-0.208		22	46	31.0	2.07		17 10.2
26	19	13	30.05	1.075		22	46	42.3	3.56		16 54.4
30	19	13	24.02	-1.931		22	46	59.5	-5.04		16 38.6
May 4	19	13	14.60	2.768		22	47	22.6	6.46		16 22.7
8	19	13	1.88	3.580		22	47	51.2	7.82		16 6.7
12	19	12	45.96	4.365		22	48	25.2	9.12		15 50.7
16	19	12	26.97	5.116		22	49	4.2	10.34		15 34.6
20	19	12	5.04	-5.836		22	49	47.9	-11.47		15 18.5
24	19	11	40.20	6.521		22	50	36.0	12.52		15 2.4
28	19	11	12.88	7.164		22	51	28.1	13.47		14 46.2
June 1	19	10	42.99	7.757		22	52	23.8	14.32		14 30.0
5	19	10	10.83	8.296		22	53	22.7	15.06		14 13.7
9	19	9	36.63	-8.780		22	54	24.3	-15.69		13 57.4
13	19	9	0.59	9.207		22	55	28.2	16.19		13 41.1
17	19	8	22.98	9.572		22	56	33.8	16.56		13 24.7
21	19	7	44.02	9.882		22	57	40.7	16.81		13 8.4
25	19	7	3.93	10.130		22	58	48.3	16.95		12 52.0
29	19	6	22.99	-10.307		22	59	56.3	-16.97		12 35.6
July 3	19	5	41.48	10.411		23	1	4.1	-16.87		12 19.1
7	19	4	59.70	10.445		23	2	11.3	16.67		12 2.7
11	19	4	17.92	10.413		23	3	17.5	16.36		11 46.3
15	19	3	36.40	10.315		23	4	22.2	15.94		11 29.9
19	19	2	55.40	10.151		23	5	25.0	15.42		11 13.5
23	19	2	15.19	-9.921		23	6	25.6	-14.82		10 57.1
27	19	1	36.03	9.623		23	7	23.6	14.15		10 40.7
31	19	0	58.21	9.257		23	8	18.8	13.39		10 24.4
Aug. 4	19	0	21.98	8.830		23	9	10.7	12.55		10 8.0
8	18	59	47.58	8.344		23	9	59.2	11.66		9 51.7
12	18	59	15.24	-7.806		23	10	44.0	-10.71		9 35.5
16	18	58	45.14	7.219		23	11	24.9	9.72		9 19.3
20	18	58	17.49	6.583		23	12	1.8	8.69		9 3.0
24	18	57	52.48	5.901		23	12	34.4	7.61		8 47.0
28	18	57	30.29	5.175		23	13	2.7	6.51		8 30.9
Sept. 1	18	57	11.09	-4.410		23	13	26.5	-5.39		8 14.8
5	18	56	55.01	3.618		23	13	45.8	4.24		7 58.8
9	18	56	42.15	2.801		23	14	0.4	3.06		7 42.9
13	18	56	32.60	1.964		23	14	10.3	1.89		7 27.0
17	18	56	26.44	1.108		23	14	15.5	-0.70		7 11.2
21	18	56	23.74	-0.235		23	14	15.9	+0.49		6 55.4
25	18	56	24.56	+0.650		23	14	11.6	1.70		6 39.7
29	18	56	28.94	1.540		23	14	2.3	2.91		6 24.1
Oct. 3	18	56	36.88	2.428		23	13	48.3	4.11		6 8.5
7	18	56	48.37	3.310		23	13	29.4	5.31		5 52.9
11	18	57	3.36	+4.182		23	13	5.8	+6.51		5 37.4
15	18	57	21.81	5.042		23	12	37.4	7.71		5 22.0
19	18	57	43.68	5.890		23	12	4.1	8.91		5 6.7
23	18	58	8.91	6.722		23	11	26.1	10.07		4 51.4
27	18	58	37.43	7.532		23	10	43.5	11.23		4 36.1
31	18	59	9.13	+8.313		23	9	56.2	+12.40		4 20.9
Nov. 4	18	59	43.89	9.061		23	9	4.3	13.55		4 5.8
8	19	0	21.57	9.774		23	8	7.8	14.67		3 50.7
12	19	1	2.04	10.457		23	7	6.9	15.76		3 35.6
16	19	1	45.18	11.106		23	6	1.7	16.84		3 20.6
20	19	2	30.84	+11.718		23	4	52.2	+17.90		3 5.6
24	19	3	18.87	12.288		23	3	38.5	18.91		2 50.7
28	19	4	9.08	12.811		23	2	20.9	19.87		2 35.9
Dec. 2	19	5	1.29	13.284		23	0	59.5	20.81		2 21.0
6	19	5	55.29	13.712		22	59	34.4	21.70		2 6.1
10	19	6	50.93	+14.097		22	58	5.9	+22.54		1 51.3
14	19	7	48.00	14.431		22	56	34.1	23.32		1 36.5
18	19	8	46.32	14.719		22	54	59.3	24.05		1 21.7
22	19	9	45.69	14.956		22	53	21.7	24.70		1 7.0
26	19	10	45.91	15.141		22	51	41.7	25.29		0 52.3
30	19	11	46.75	+15.268		22	49	59.4	+25.79		0 37.6
34	19	12	47.98	+15.336		22	48	15.4	+26.21		0 22.9

Least semidiameter,
Greatest semidiameter,

January 5, 1".64
July 6, 1".81

Least horizontal parallax,
Greatest horizontal parallax,

January 5, 0".41
July 6, 0".17

[Eph 68]

GREENWICH MEAN TIME.

Month and Day.	Apparent Right Ascension.			Var. of R. A. for 1 Day.			Apparent Declination.			Var. of Decl. for 1 Day.			Meridian Passage.	Month and Day	Apparent Right Ascension.			Var. of R. A. for 1 Day.			Apparent Declination.			Var. of Decl. for 1 Day.			Meridian Passage.
	h m s	s	° ' "	"	h m	h m s	s	° ' "	"	h m	h m s	s			° ' "	"	h m										
Jan. 1	6	58	40.99	-7.266	+21 55 1.3	+10.76	12 17.6	July 3	7	2	26.09	+9.558	+21 54 40.1	-13.64	0 18.0												
5	6	58	11.86	7.286	21 55 44.5	10.81	12 1.4	7	7	3	4.35	9.565	21 53 45.0	13.89	0 20.1												
9	6	57	42.76	7.258	21 56 27.8	10.86	11 45.2	11	7	3	42.59	9.543	21 52 49.0	14.09	23 44.0												
13	6	57	13.86	7.184	21 57 11.1	10.79	11 29.0	15	7	4	20.67	9.490	21 51 52.3	14.24	23 28.9												
17	6	56	45.35	7.059	21 57 54.1	10.64	11 12.8	19	7	4	58.48	9.407	21 50 55.1	14.35	23 13.8												
21	6	56	17.42	-6.892	+21 58 36.5	+10.49	10 56.6	23	7	5	35.90	+9.296	+21 49 57.5	-14.41	22 58.7												
25	6	55	50.24	6.687	21 59 18.0	10.25	10 40.4	27	7	6	12.80	9.149	21 48 59.8	14.40	22 43.6												
29	6	55	23.98	6.436	21 59 58.5	9.96	10 24.2	31	7	6	49.05	8.968	21 48 2.3	14.32	22 28.5												
Feb. 2	6	54	58.82	6.138	22 0 37.7	9.61	10 8.1	Aug. 4	7	7	24.51	8.756	21 47 5.2	14.20	22 13.3												
6	6	54	34.93	5.798	22 1 15.4	9.21	9 52.0	8	7	7	59.06	8.513	21 46 8.7	14.01	21 58.2												
10	6	54	12.47	-5.423	+22 1 51.4	+8.79	9 35.9	12	7	8	32.58	+8.243	+21 45 13.1	-13.77	21 43.0												
14	6	53	51.58	5.015	22 2 25.7	8.30	9 19.8	16	7	9	4.97	7.947	21 44 18.5	13.47	21 27.8												
18	6	53	32.39	4.577	22 2 57.8	7.77	9 3.8	20	7	9	36.10	7.615	21 43 25.3	13.10	21 12.5												
22	6	53	15.01	4.109	22 3 27.8	7.22	8 47.8	24	7	10	5.86	7.259	21 42 33.7	12.66	20 57.3												
26	6	52	59.55	3.616	22 3 55.6	6.65	8 31.8	28	7	10	34.15	6.881	21 41 44.0	12.17	20 42.0												
Mar. 1	6	52	46.10	-3.102	+22 4 21.0	+6.04	8 15.8	Sept. 1	7	11	0.87	+6.476	+21 40 56.3	-11.62	20 26.7												
5	6	52	34.75	2.565	22 4 43.9	5.39	7 59.9	5	7	11	25.92	6.042	21 40 11.0	11.01	20 11.4												
9	6	52	25.59	2.010	22 5 4.1	4.71	7 44.1	9	7	11	49.19	5.584	21 39 28.2	10.35	19 56.1												
13	6	52	18.68	1.446	22 5 21.6	4.04	7 28.2	13	7	12	10.59	5.112	21 38 48.2	9.62	19 40.7												
17	6	52	14.04	0.874	22 5 36.4	3.35	7 12.4	17	7	12	30.06	4.618	21 38 11.2	8.85	19 25.3												
21	6	52	11.69	-0.300	+22 5 48.4	+2.64	6 56.7	21	7	12	47.51	+4.102	+21 37 37.4	-8.02	19 9.8												
25	6	52	11.65	+0.282	22 5 57.5	1.91	6 40.9	25	7	13	2.86	3.573	21 37 7.0	7.14	18 54.3												
29	6	52	13.95	0.868	22 6 3.7	1.17	6 25.2	29	7	13	16.06	3.026	21 36 40.2	6.24	18 38.8												
Apr. 2	6	52	18.59	1.450	22 6 6.9	+0.42	6 9.6	Oct. 3	7	13	27.05	2.466	21 36 17.1	5.30	18 23.3												
6	6	52	25.54	2.027	22 6 7.1	-0.31	5 54.0	7	7	13	35.79	1.901	21 35 57.8	4.34	18 7.7												
10	6	52	34.79	+2.595	+22 6 4.4	-1.05	5 38.4	11	7	13	42.25	+1.330	+21 35 42.4	-3.34	17 52.1												
14	6	52	46.28	3.150	22 5 58.7	1.80	5 22.9	15	7	13	46.42	0.753	21 35 31.1	2.31	17 36.4												
18	6	52	59.97	3.691	22 5 50.0	2.55	5 7.4	19	7	13	48.27	+0.173	21 35 23.9	1.27	17 20.7												
22	6	53	15.79	4.217	22 5 38.3	3.29	4 51.9	23	7	13	47.80	-0.410	21 35 20.9	-0.22	17 5.0												
26	6	53	33.69	4.729	22 5 23.7	4.03	4 36.5	27	7	13	45.00	0.987	21 35 22.1	+0.82	16 49.2												
30	6	53	53.60	+5.226	+22 5 6.1	-4.76	4 21.1	31	7	13	39.91	-1.558	+21 35 27.5	+1.84	16 33.4												
May 4	6	54	15.46	5.702	22 4 45.6	5.47	4 5.7	Nov. 4	7	13	32.55	2.116	21 35 36.8	2.84	16 17.5												
8	6	54	39.18	6.152	22 4 22.3	6.17	3 50.4	8	7	13	23.00	2.659	21 35 50.2	3.85	16 1.6												
12	6	55	4.65	6.577	22 3 56.2	6.87	3 35.1	12	7	13	11.30	3.187	21 36 7.6	4.82	15 45.7												
16	6	55	31.76	6.977	22 3 27.3	7.56	3 19.8	16	7	12	57.52	3.697	21 36 28.8	5.76	15 29.7												
20	6	56	0.41	+7.333	+22 2 55.8	-8.21	3 4.6	20	7	12	41.75	-4.186	+21 36 53.7	+6.65	15 13.7												
24	6	56	30.53	7.705	22 2 21.6	8.86	2 49.3	24	7	12	24.08	4.647	21 37 22.0	7.50	14 57.7												
28	6	57	2.01	8.029	22 1 44.9	9.49	2 34.1	28	7	12	4.61	5.082	21 37 53.7	8.31	14 41.7												
June 1	6	57	34.72	8.321	22 1 5.7	10.09	2 18.9	Dec. 2	7	11	43.47	5.481	21 38 28.5	9.06	14 25.6												
5	6	58	8.54	8.584	22 0 24.2	10.64	2 3.7	6	7	11	20.81	5.842	21 39 6.2	9.74	14 9.5												
9	6	58	43.35	+8.814	+21 59 40.6	-11.16	1 48.6	10	7	10	56.78	-6.168	+21 39 46.4	+10.34	13 53.3												
13	6	59	19.02	9.015	21 58 54.9	11.67	1 33.4	14	7	10	31.51	6.460	21 40 28.9	10.86	13 37.2												
17	6	59	55.43	9.186	21 58 7.2	12.14	1 18.2	18	7	10	5.16	6.710	21 41 13.3	11.32	13 21.0												
21	7	0	32.47	9.328	21 57 17.8	12.56	1 3.1	22	7	9	37.89	6.916	21 41 59.5	11.70	13 4.8												
25	7	1	10.01	9.438	21 56 26.7	12.96	0 48.1	26	7	9	9.91	7.069	21 42 46.9	12.00	12 48.7												
29	7	1	47.93	+9.516	+21 55 34.1	-13.32	0 33.0	30	7	8	41.40	-7.178	+21 43 35.5	+12.26	12 32.5												
July 3	7	2	26.09	+9.558	+21 54 40.1	-13.64	0 18.0	34	7	8	12.54	-7.241	+21 44 25.0	+12.40	12 16.3												

Greatest semidiameter, January 4, 1".33
 Least semidiameter, July 7, 1".24

Greatest horizontal parallax, January 4, 0".31
 Least horizontal parallax, July 7, 0".29

[Eph o']

MERCURY.											
GREENWICH MEAN NOON.											
Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.		Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
	°	'	"			°	'			At Date.	At Intermediate Date.
Jan.	1	255	53 55.8	2 44 39.6	+ 10 51.3	— 3 22 17.2	— 17 41.2	9.669 0300	0.152 9886	0.153 5494	
	2	258	38 40.4	2 44 51.8	11 28.1	3 39 44.4	17 12.8	9.668 8948	0.154 0680	0.154 5446	
	3	261	23 43.5	2 45 16.4	11 58.6	3 56 42.5	16 43.2	9.668 4996	0.154 9793	0.155 3722	
	4	264	9 17.3	2 45 53.2	12 22.5	4 13 10.4	16 12.2	9.667 8439	0.155 7233	0.156 0328	
	5	266	55 34.0	2 46 42.3	12 39.6	4 29 6.5	15 39.7	9.666 9275	0.156 3008	0.156 5273	
	6	269	42 46.1	2 47 44.0	+ 12 49.5	— 4 44 29.3	— 15 5.6	9.665 7496	0.156 7120	0.156 8549	
	7	272	31 6.2	2 48 58.3	12 52.2	4 59 17.1	14 29.7	9.664 3098	0.156 9559	0.157 0150	
	8	275	20 47.1	2 50 25.7	12 47.4	5 13 28.1	13 51.8	9.662 6071	0.157 0320	0.157 0068	
	9	278	12 2.0	2 52 6.3	12 35.0	5 27 0.0	13 11.7	9.660 6405	0.156 9390	0.156 8282	
	10	281	5 4.3	2 54 0.6	12 14.9	5 39 50.8	12 29.3	9.658 4090	0.156 6741	0.156 4765	
	11	284	0 7.8	2 56 8.9	+ 11 47.0	— 5 51 57.8	— 11 44.1	9.655 9115	0.156 2349	0.155 9489	
	12	286	57 26.9	2 58 31.6	11 11.4	6 3 18.1	10 56.1	9.653 1473	0.155 6181	0.155 2420	
	13	289	57 16.1	3 1 9.3	10 27.9	6 13 48.8	10 4.9	9.650 1153	0.154 8198	0.154 3510	
	14	292	59 50.8	3 4 2.7	9 36.8	6 23 26.7	9 10.2	9.646 8151	0.153 8349	0.153 2708	
	15	296	5 26.9	3 7 12.1	8 38.3	6 32 7.8	8 11.4	9.643 2459	0.152 6580	0.151 9955	
	16	299	14 20.7	3 10 38.3	+ 7 32.6	— 6 39 48.0	— 7 8.4	9.639 4081	0.151 2826	0.150 5186	
	17	302	26 49.4	3 14 21.9	6 20.1	6 46 23.0	6 0.7	9.635 3021	0.149 7023	0.148 8325	
	18	305	43 10.6	3 18 23.5	5 1.3	6 51 47.8	4 47.8	9.630 9289	0.147 9083	0.146 9286	
	19	309	3 42.8	3 22 44.1	3 36.7	6 55 56.9	3 29.4	9.626 2906	0.145 8921	0.144 7973	
	20	312	28 45.3	3 27 24.3	2 7.3	6 58 44.7	2 5.0	9.621 3904	0.143 6430	0.142 4279	
	21	315	58 38.1	3 32 24.6	+ 0 33.9	— 7 0 4.8	— 0 34.0	9.616 2327	0.141 1505	0.139 8093	
	22	319	33 41.6	3 37 45.8	— 1 2.3	6 59 50.5	+ 1 4.1	9.610 8234	0.138 4024	0.136 9282	
	23	323	14 17.0	3 43 28.6	2 39.9	6 57 54.3	2 49.6	9.605 1704	0.135 3849	0.133 7707	
	24	327	0 46.1	3 49 33.4	4 17.4	6 54 8.7	4 42.9	9.599 2843	0.132 0836	0.130 3217	
	25	330	53 31.1	3 56 0.5	5 53.0	6 48 25.6	6 44.7	9.593 1778	0.128 4828	0.126 5646	
	26	334	52 54.5	4 2 50.2	— 7 24.7	— 6 40 36.4	+ 8 55.0	9.586 8676	0.124 5647	0.122 4810	
	27	338	59 18.9	4 10 2.3	8 50.1	6 30 32.6	11 14.0	9.580 3736	0.120 3108	0.118 0518	
	28	343	13 6.5	4 17 36.5	10 6.8	6 18 5.5	13 41.6	9.573 7204	0.115 7013	0.113 2567	
	29	347	34 39.0	4 25 31.9	11 12.1	6 3 6.6	16 17.4	9.566 9376	0.110 7150	0.108 0735	
	30	352	4 16.9	4 33 47.2	12 3.2	5 45 28.1	19 0.8	9.560 0601	0.105 3293	0.102 4796	
	31	356	42 19.2	4 42 20.2	— 12 37.4	— 5 25 2.8	+ 21 50.8	9.553 1295	0.099 5212	0.096 4512	
Feb.	1	1 29 2.3	4 51 8.3	12 51.9	5 1 44.9	24 45.6	9.546 1936	0.093 2666	0.089 9643		
	2	6 24 39.7	5 0 8.0	12 44.5	4 35 30.7	27 43.0	9.539 3078	0.086 5414	0.082 9948		
	3	11 29 20.6	5 9 14.6	12 13.3	4 6 18.9	30 40.2	9.532 5346	0.079 3218	0.075 5193		
	4	16 43 9.2	5 18 22.4	11 17.0	3 34 11.5	33 33.5	9.525 9435	0.071 5849	0.067 5158		
	5	22 6 3.5	5 27 24.8	— 9 55.4	— 2 59 14.6	+ 36 18.6	9.519 6110	0.063 3098	0.058 9645		
	6	27 37 54.3	5 36 13.9	8 9.7	2 21 38.8	38 50.4	9.513 6188	0.054 4781	0.049 8492		
	7	33 18 23.7	5 44 40.4	6 2.3	1 41 40.1	41 3.3	9.508 0534	0.045 0765	0.040 1590		
	8	39 7 4.5	5 52 35.0	3 36.9	0 59 40.2	42 51.7	9.503 0023	0.035 0964	0.029 8887		
	9	45 3 19.5	5 59 46.9	— 0 59.1	— 0 16 6.7	44 9.6	9.498 5526	0.024 5368	0.019 0421		
	10	51 6 20.6	6 6 5.5	+ 1 44.2	+ 0 28 27.2	+ 44 51.8	9.494 7867	0.013 4063	0.007 6319		
	11	57 15 9.4	6 11 20.6	4 25.3	1 13 23.7	44 53.9	9.491 7789	0.001 7227	9.995 6830		
	12	63 28 37.4	6 15 22.4	6 55.9	1 58 0.9	44 13.0	9.489 5919	9.989 5181	9.983 2340		
	13	69 45 27.1	6 18 2.9	9 7.8	2 41 35.2	42 48.1	9.488 2731	9.976 8377	9.970 3374		
	14	76 4 14.2	6 19 16.4	10 53.8	3 23 23.0	40 40.3	9.487 8519	9.963 7422	9.957 0622		
	15	82 23 29.7	6 18 59.2	+ 12 8.0	+ 4 2 42.6	+ 37 52.5	9.488 3377	9.950 3088	9.943 4943		
	16	88 41 42.5	6 17 11.3	+ 12 46.7	+ 4 38 56.5	+ 34 29.8	9.489 7196	9.936 6321	9.929 7363		

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Interme- diate Date.
Feb. 15	82 23 29.7	6 18 59.2	+ 12 8.0	+ 4 2 42.6	+ 37 52.5	9.488 3377	9.950 3088	9.943 4943
16	88 41 42.5	6 17 11.3	12 46.7	4 38 56.5	34 29.8	9.489 7196	9.936 6321	9.929 7363
17	94 57 22.8	6 13 54.9	12 48.8	5 11 33.0	30 39.0	9.491 9669	9.922 8227	9.915 9073
18	101 9 4.7	6 9 15.5	12 14.4	5 40 7.7	26 27.5	9.495 0311	9.909 0079	9.902 1425
19	107 15 28.9	6 3 21.1	11 7.4	6 4 23.9	22 3.3	9.498 8485	9.895 3298	9.888 5893
20	113 15 25.1	5 56 21.3	+ 9 32.2	+ 6 24 12.8	+ 17 34.4	9.503 3439	9.881 9410	9.875 4059
21	119 7 53.4	5 48 27.2	7 35.0	6 39 33.4	13 7.7	9.508 4344	9.869 0051	9.862 7592
22	124 52 5.3	5 39 50.4	5 22.2	6 50 30.9	8 49.1	9.514 0333	9.856 6890	9.850 8155
23	130 27 23.9	5 30 42.4	3 0.6	6 57 16.0	4 43.8	9.520 0525	9.845 1589	9.839 7391
24	135 53 23.4	5 21 14.1	+ 0 36.3	7 0 4.0	+ 0 55.1	9.526 4061	9.834 5747	9.829 6831
25	141 9 48.7	5 11 35.4	- 1 45.0	+ 6 59 12.5	- 2 34.7	9.533 0128	9.825 0812	9.820 7844
26	146 16 33.7	5 1 55.0	3 58.6	6 55 1.3	5 44.3	9.539 7965	9.816 8058	9.813 1568
27	151 13 40.5	4 52 20.3	6 1.0	6 47 50.7	8 33.4	9.546 6879	9.809 8476	9.806 8857
28	156 1 18.1	4 42 57.4	7 49.4	6 38 1.1	11 2.4	9.553 6251	9.804 2767	9.802 0240
29	160 39 40.9	4 33 51.0	9 21.9	6 25 52.3	13 12.1	9.560 5533	9.800 1287	9.798 5902
Mar. 1	165 9 7.1	4 25 4.7	- 10 37.5	+ 6 11 42.9	- 15 3.8	9.567 4251	9.797 4049	9.796 5687
2	169 29 58.1	4 16 41.0	11 36.0	5 55 50.2	16 38.9	9.574 1997	9.796 0745	9.795 9138
3	173 42 37.4	4 8 41.8	12 17.5	5 38 30.1	17 58.9	9.580 8424	9.796 0766	9.796 5517
4	177 47 30.1	4 1 8.0	12 42.5	5 19 56.9	19 5.4	9.587 3241	9.797 3265	9.798 3879
5	181 45 2.0	3 54 0.0	12 52.1	5 0 23.4	19 59.8	9.593 6205	9.799 7219	9.801 3137
6	185 35 38.9	3 47 18.0	- 12 47.3	+ 4 40 0.9	- 20 43.5	9.599 7117	9.803 1481	9.805 2099
7	189 19 46.5	3 41 1.5	12 29.5	4 18 59.5	21 17.9	9.605 5816	9.807 4837	9.809 9544
8	192 57 50.2	3 35 10.0	11 59.8	3 57 27.8	21 44.1	9.611 2175	9.812 6069	9.815 4267
9	196 30 14.6	3 29 42.8	11 19.7	3 35 33.5	22 3.2	9.616 6092	9.818 3996	9.821 5121
10	199 57 23.7	3 24 39.0	10 30.7	3 13 23.3	22 16.2	9.621 7488	9.824 7508	9.828 1028
11	203 19 40.4	3 19 57.8	- 9 33.8	+ 2 51 2.8	- 22 23.9	9.626 6305	9.831 5565	9.835 1003
12	206 37 26.6	3 15 38.1	8 30.5	2 28 37.0	22 27.0	9.631 2499	9.838 7238	9.842 4168
13	209 51 3.6	3 11 39.1	7 21.9	2 6 10.1	22 26.1	9.635 6040	9.846 1701	9.849 9749
14	213 0 51.5	3 7 59.8	6 9.2	1 43 45.9	22 21.8	9.639 6910	9.853 8229	9.857 7067
15	216 7 9.6	3 4 39.3	4 53.4	1 21 27.5	22 14.7	9.643 5096	9.861 6193	9.865 5542
16	219 10 16.2	3 1 36.8	- 3 35.5	+ 0 59 17.5	- 22 4.9	9.647 0594	9.869 5057	9.873 4683
17	222 10 29.0	2 58 51.5	2 16.4	0 37 18.4	21 52.9	9.650 3405	9.877 4372	9.881 4078
18	225 8 4.7	2 56 22.6	- 0 57.0	+ 0 15 32.3	21 39.0	9.653 3531	9.885 3760	9.889 3379
19	228 3 19.5	2 54 9.5	+ 0 22.0	- 0 5 59.1	21 23.4	9.656 0982	9.893 2902	9.897 2301
20	230 56 28.8	2 52 11.5	1 39.8	0 27 14.1	21 6.4	9.658 5766	9.901 1548	9.905 0619
21	233 47 47.4	2 50 28.1	+ 2 55.8	- 0 48 11.4	- 20 47.9	9.660 7892	9.908 9491	9.912 8143
22	236 37 29.8	2 48 58.9	4 9.3	1 8 49.6	20 28.3	9.662 7369	9.916 6558	9.920 4726
23	239 25 49.8	2 47 43.3	5 19.8	1 29 7.6	20 7.5	9.664 4209	9.924 2630	9.928 0257
24	242 13 0.8	2 46 41.0	6 26.8	1 49 4.2	19 45.6	9.665 8420	9.931 7599	9.935 4644
25	244 59 16.1	2 45 51.7	7 29.7	2 8 38.4	19 22.7	9.667 0011	9.939 1387	9.942 7823
26	247 44 48.5	2 45 15.1	+ 8 28.1	- 2 27 49.2	- 18 58.7	9.667 8988	9.946 3946	9.949 9749
27	250 29 50.5	2 44 50.9	9 21.7	2 46 35.4	18 33.6	9.668 5358	9.953 5230	9.957 0387
28	253 14 34.5	2 44 39.2	10 9.9	3 4 56.1	18 7.6	9.668 9125	9.960 5218	9.963 9721
29	255 59 13.0	2 44 39.7	10 52.5	3 22 50.2	17 40.4	9.669 0292	9.967 3896	9.970 7743
30	258 43 58.1	2 44 52.4	11 29.1	3 40 16.5	17 11.9	9.668 8859	9.974 1263	9.977 4454
31	261 29 2.0	2 45 17.3	+ 11 59.4	- 3 57 13.7	- 16 42.3	9.668 4825	9.980 7318	9.983 9855
Apr. 1	264 14 36.9	2 45 54.5	+ 12 23.1	- 4 13 40.6	- 16 11.2	9.667 8188	9.987 2068	9.990 3961

MERCURY.										
GREENWICH MEAN NOON.										
Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
	°	'	"	°	'	°	'		At Date.	At Intermediate Date.
Apr. 1	264	14	36.9	2 45 54.5	+ 12 23.1	- 4 13 40.6	- 16 11.2	9.667 8188	9.987 2068	9.990 3961
2	267	0	55.2	2 46 44.1	12 39.9	4 29 35.7	15 38.7	9.666 8944	9.993 5532	9.996 6782
3	269	48	9.2	2 47 46.2	12 49.7	4 44 57.5	15 4.6	9.665 7083	9.999 7715	0.002 8333
4	272	36	31.7	2 49 1.0	12 52.2	4 59 44.2	14 28.4	9.664 2603	0.005 8638	0.008 8632
5	275	26	15.4	2 50 28.7	12 47.2	5 13 53.9	13 50.4	9.662 5494	0.011 8317	0.014 7696
6	278	17	33.4	2 52 9.6	+ 12 34.5	- 5 27 24.6	- 13 10.4	9.660 5746	0.017 6770	0.020 5538
7	281	10	39.3	2 54 4.4	12 14.2	5 40 14.0	12 27.9	9.658 3348	0.023 4004	0.026 2169
8	284	5	46.9	2 56 13.1	11 46.1	5 52 19.6	11 42.8	9.655 8291	0.029 0034	0.031 7601
9	287	3	10.4	2 58 36.3	11 10.1	6 3 38.6	10 54.6	9.653 0566	0.034 4871	0.037 1843
10	290	3	4.6	3 1 14.6	10 26.5	6 14 7.8	10 3.1	9.650 0164	0.039 8517	0.042 4895
11	293	5	44.8	3 4 8.4	+ 9 35.1	- 6 23 43.8	- 9 8.2	9.646 7077	0.045 0976	0.047 6759
12	296	11	26.8	3 7 18.3	8 36.4	6 32 23.1	8 9.4	9.643 1302	0.050 2244	0.052 7429
13	299	20	27.0	3 10 45.0	7 30.4	6 40 1.4	7 6.3	9.639 2840	0.055 2313	0.057 6894
14	302	33	2.6	3 14 29.2	6 17.7	6 46 34.2	5 58.5	9.635 1698	0.060 1170	0.062 5139
15	305	49	31.4	3 18 31.4	4 58.7	6 51 56.7	4 45.5	9.630 7884	0.064 8796	0.067 2139
16	309	10	11.8	3 22 52.6	+ 3 34.0	- 6 56 3.4	- 3 26.9	9.626 1419	0.069 5163	0.071 7864
17	312	35	23.2	3 27 33.4	2 4.4	6 58 48.6	2 2.2	9.621 2336	0.074 0236	0.076 2275
18	316	5	25.3	3 32 34.2	+ 0 31.0	7 0 5.8	- 0 31.0	9.616 0680	0.078 3973	0.080 5324
19	319	40	38.7	3 37 56.1	- 1 5.3	6 59 48.4	+ 1 7.2	9.610 6510	0.082 6320	0.084 6954
20	323	21	24.8	3 43 39.6	2 42.9	6 57 49.0	2 52.9	9.604 9907	0.086 7217	0.088 7100
21	327	8	5.3	3 49 45.1	- 4 20.4	- 6 53 59.9	+ 4 46.6	9.599 0975	0.090 6592	0.092 5681
22	331	1	2.4	3 56 12.9	5 55.9	6 48 12.9	6 48.6	9.592 9847	0.094 4357	0.096 2608
23	335	0	38.6	4 3 3.2	7 27.5	6 40 19.7	8 59.2	9.586 6686	0.098 0420	0.099 7780
24	339	7	16.4	4 10 16.1	8 52.6	6 30 11.5	11 18.5	9.580 1693	0.101 4671	0.103 1077
25	343	21	18.2	4 17 51.0	10 9.0	6 17 39.8	13 46.3	9.573 5117	0.104 6982	0.106 2370
26	347	43	5.5	4 25 47.0	- 11 13.9	- 6 2 36.2	+ 16 22.4	9.566 7254	0.107 7222	0.109 1518
27	352	12	58.8	4 34 2.8	12 4.5	5 44 52.5	19 6.1	9.559 8458	0.110 5237	0.111 8358
28	356	51	17.0	4 42 36.3	12 38.1	5 24 21.9	21 56.2	9.552 9145	0.113 0859	0.114 2721
29	1	38	16.5	4 51 24.9	12 52.0	5 0 58.6	24 51.1	9.545 9796	0.115 3915	0.116 4417
30	6	34	10.6	5 0 24.8	12 43.9	4 34 38.9	27 48.6	9.539 0965	0.117 4200	0.118 3241
May 1	11	39	8.4	5 9 31.4	- 12 11.9	- 4 5 21.6	+ 30 45.7	9.532 3279	0.119 1512	0.119 8986
2	16	53	13.9	5 18 39.2	11 14.8	3 33 8.9	33 38.8	9.525 7439	0.120 5634	0.121 1427
3	22	16	25.0	5 27 41.3	9 52.5	2 58 6.9	36 23.5	9.519 4208	0.121 6337	0.122 0335
4	27	48	32.0	5 36 29.8	8 6.1	2 20 26.3	38 54.8	9.513 4408	0.122 3394	0.122 5486
5	33	29	17.0	5 44 55.6	5 57.9	1 40 23.5	41 7.1	9.507 8903	0.122 6584	0.122 6657
6	39	18	12.4	5 52 48.9	- 3 32.1	- 0 58 20.3	+ 42 54.6	9.502 8567	0.122 5680	0.122 3627
7	45	14	40.6	5 59 59.4	- 0 54.1	- 0 14 44.4	44 11.5	9.498 4271	0.122 0475	0.121 6201
8	51	17	53.3	6 6 16.2	+ 1 49.3	+ 0 29 50.8	44 52.5	9.494 6835	0.121 0785	0.120 4207
9	57	26	51.6	6 11 29.0	4 30.2	1 14 47.3	44 53.3	9.491 7005	0.119 6451	0.118 7504
10	63	40	26.9	6 15 28.4	7 0.3	1 59 23.2	44 11.1	9.489 5399	0.117 7353	0.116 5989
11	69	57	21.3	6 18 6.4	+ 9 11.5	+ 2 42 55.0	+ 42 44.8	9.488 2486	0.115 3405	0.113 9599
12	76	16	10.5	6 19 17.0	10 56.6	3 24 38.7	40 35.6	9.487 8554	0.112 4570	0.110 8321
13	82	35	25.2	6 18 57.1	12 9.7	4 3 53.1	37 46.7	9.488 3693	0.109 0859	0.107 2195
14	88	53	34.4	6 17 6.3	12 47.3	4 40 0.6	34 23.1	9.489 7786	0.105 2339	0.103 1303
15	95	9	8.4	6 13 47.3	12 48.0	5 12 29.9	30 31.5	9.492 0520	0.100 9105	0.098 5764
16	101	20	41.4	6 9 5.5	+ 12 12.8	+ 5 40 56.8	+ 26 19.5	9.495 1404	0.096 1303	0.093 5746
17	107	26	54.4	6 3 8.8	+ 11 4.8	+ 6 5 4.8	+ 21 55.1	9.498 9799	0.090 9119	0.088 1448

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.			Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
											At Date.	At Intermediate Date.
May 17	107	26	54.4	6 3 8.8	+ 11 4.8	+ 6	5	4.8	+ 21 55.1	9.498 9799	0.090 9119	0.088 1448
18	113	26	37.4	5 56 7.2	9 28.9	6	24	45.4	17 26.0	9.503 4950	0.085 2760	0.082 3086
19	119	18	50.9	5 48 11.7	7 31.1	6	39	57.6	12 59.5	9.508 6025	0.079 2457	0.076 0904
20	125	2	46.7	5 39 33.8	5 17.9	6	50	47.1	8 41.4	9.514 2155	0.072 8458	0.069 5149
21	130	37	48.2	5 30 25.0	2 56.1	6	57	24.7	4 36.5	9.520 2461	0.066 1010	0.062 6074
22	136	3	30.1	5 20 56.2	+ 0 31.9	+ 7	0	5.6	+ 0 48.3	9.526 6086	0.059 0373	0.055 3938
23	141	19	37.3	5 11 17.3	- 1 49.3	6	59	7.6	- 2 40.9	9.533 2217	0.051 6797	0.047 8980
24	146	26	4.3	5 1 37.0	4 2.6	6	54	50.5	5 49.8	9.540 0095	0.044 0518	0.040 1440
25	151	22	53.4	4 52 2.7	6 4.6	6	47	34.7	8 38.3	9.546 9030	0.036 1774	0.032 1546
26	156	10	13.7	4 42 40.2	7 52.5	6	37	40.6	11 6.6	9.553 8405	0.028 0783	0.023 9512
27	160	48	19.4	4 33 34.3	- 9 24.5	+ 6	25	27.8	- 13 15.8	9.560 7676	0.019 7757	0.015 5542
28	165	17	29.2	4 24 48.7	10 39.6	6	11	14.9	15 7.0	9.567 6369	0.011 2889	0.006 9822
29	169	38	4.5	4 16 25.8	11 37.5	5	55	19.3	16 41.6	9.574 4079	0.002 6362	9.998 2532
30	173	50	28.8	4 8 27.3	12 18.5	5	37	56.7	18 1.2	9.581 0460	9.993 8352	9.989 3844
31	177	55	7.4	4 0 54.3	12 43.1	5	19	21.5	19 7.2	9.587 5221	9.984 9025	9.980 3914
June 1	181	52	26.1	3 53 47.2	- 12 52.2	+ 4	59	46.3	- 20 1.3	9.593 8122	9.975 8531	9.971 2895
2	185	42	50.7	3 47 6.0	12 47.0	4	39	22.4	20 44.8	9.599 8966	9.966 7024	9.962 0935
3	189	26	46.7	3 40 50.3	12 28.7	4	18	19.9	21 18.8	9.605 7594	9.957 4647	9.952 8176
4	193	4	39.6	3 34 59.6	11 58.7	3	56	47.5	21 44.8	9.611 3878	9.948 1541	9.943 4761
5	196	36	54.0	3 29 33.1	11 18.4	3	34	52.6	22 3.8	9.616 7717	9.938 7854	9.934 0837
6	200	3	53.7	3 24 30.0	- 10 29.0	+ 3	12	42.0	- 22 16.6	9.621 9033	9.929 3728	9.924 6545
7	203	26	1.6	3 19 49.6	9 32.0	2	50	21.2	22 24.1	9.626 7767	9.919 9307	9.915 2036
8	206	43	39.9	3 15 30.6	8 28.5	2	27	55.3	22 27.0	9.631 3878	9.910 4752	9.905 7474
9	209	57	9.7	3 11 32.1	7 19.7	2	5	28.5	22 26.0	9.635 7337	9.901 0224	9.896 3024
10	213	6	50.9	3 7 53.4	6 6.9	1	43	4.3	22 21.8	9.639 8123	9.891 5899	9.886 8872
11	216	13	2.8	3 4 33.5	- 4 51.0	+ 1	20	46.1	- 22 14.3	9.643 6226	9.882 1967	9.877 5210
12	219	16	3.9	3 1 31.6	3 33.1	0	58	36.4	22 4.5	9.647 1641	9.872 8629	9.868 2253
13	222	16	11.7	2 58 46.7	2 14.0	0	36	37.7	21 52.5	9.650 4368	9.863 6113	9.859 0239
14	225	13	42.9	2 56 18.3	- 0 54.5	+ 0	14	52.0	21 38.6	9.653 4412	9.854 4661	9.849 9423
15	228	8	53.6	2 54 5.6	+ 0 24.4	- 0	6	38.9	21 22.9	9.656 1781	9.845 4551	9.841 0084
16	231	1	59.3	2 52 8.2	+ 1 42.2	- 0	27	53.4	- 21 5.8	9.658 6483	9.836 6062	9.832 2528
17	233	53	14.8	2 50 25.3	2 58.1	0	48	50.1	20 47.3	9.660 8527	9.827 9524	9.823 7092
18	236	42	54.6	2 48 56.4	4 11.5	1	9	27.7	20 27.6	9.662 7922	9.819 5279	9.815 4134
19	239	31	12.3	2 47 41.2	5 21.9	1	29	45.0	20 6.8	9.664 4679	9.811 3707	9.807 4049
20	242	18	21.5	2 46 39.4	6 28.8	1	49	41.0	19 44.9	9.665 8809	9.803 5213	9.799 7253
21	245	4	35.4	2 45 50.5	+ 7 31.6	- 2	9	14.5	- 19 21.9	9.667 0319	9.796 0227	9.792 4195
22	247	50	6.7	2 45 14.2	8 29.9	2	28	24.5	18 57.9	9.667 9217	9.788 9217	9.785 5355
23	250	35	8.0	2 44 50.5	9 23.3	2	47	10.0	18 32.9	9.668 5509	9.782 2669	9.779 1220
24	253	19	51.8	2 44 39.1	10 11.4	3	5	29.9	18 6.7	9.668 9198	9.776 1074	9.773 2298
25	256	4	30.4	2 44 40.0	10 53.8	3	23	23.1	17 39.5	9.669 0285	9.770 4958	9.767 9119
26	258	49	15.9	2 44 53.1	+ 11 30.2	- 3	40	48.5	- 17 11.0	9.668 8771	9.765 4845	9.763 2199
27	261	34	20.7	2 45 18.4	12 0.3	3	57	44.8	16 41.4	9.668 4656	9.761 1244	9.759 2043
28	264	19	56.8	2 45 55.9	12 23.8	4	14	10.8	16 10.3	9.667 7940	9.757 4655	9.755 9139
29	267	6	16.7	2 46 45.8	12 40.4	4	30	4.9	15 37.7	9.666 8617	9.754 5549	9.753 3940
30	269	53	32.7	2 47 48.3	12 49.9	4	45	25.6	15 3.4	9.665 6680	9.752 4361	9.751 6854
July 1	272	41	57.5	2 49 3.4	+ 12 52.1	- 5	0	11.1	- 14 27.4	9.664 2121	9.751 1463	9.750 8225
2	275	31	43.9	2 50 31.5	+ 12 46.9	- 5	14	19.8	- 13 49.5	9.662 4931	9.750 7169	9.750 8321

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.			Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—			
	°	'	"			°	'	"			At Date.	At Interme- diate Date.		
July	1	272	41	57.5	2 49	3.4	+ 12	52.1	- 5	0	11.1	9.664 2121	9.751 1463	9.750 8225
	2	275	31	43.9	2 50	31.5	12	46.9	5	14	19.8	9.662 4931	9.750 7169	9.750 8321
	3	278	23	5.0	2 52	13.0	12	34.1	5	27	49.3	9.660 5103	9.751 1704	9.751 7335
	4	281	16	14.5	2 54	8.1	12	13.5	5	40	37.3	9.658 2627	9.752 5221	9.753 5363
	5	284	11	26.0	2 56	17.3	11	45.1	5	52	41.5	9.655 7492	9.754 7760	9.756 2404
	6	287	8	54.0	2 58	40.9	+ 11	8.9	- 6	3	58.9	9.652 9688	9.757 9.83	9.759 8379
	7	290	8	53.0	3 1	19.6	10	25.0	6	14	26.5	9.649 9207	9.761 9662	9.764 3099
	8	293	11	38.5	3 4	13.9	9	33.4	6	24	0.9	9.646 6042	9.766 8655	9.769 6289
	9	296	17	26.2	3 7	24.3	8	34.4	6	32	38.3	9.643 0188	9.772 5953	9.775 7600
	10	299	26	32.7	3 10	51.6	7	26.3	6	40	14.6	9.639 1648	9.779 1171	9.782 6610
	11	302	39	15.2	3 14	36.3	+ 6	15.4	- 6	46	45.3	9.635 0428	9.786 3853	9.790 2842
	12	305	55	51.3	3 18	39.0	4	56.2	6	52	5.5	9.630 6537	9.794 3508	9.798 5780
	13	309	16	39.6	3 23	0.7	3	31.3	6	56	9.8	9.625 9998	9.802 9589	9.807 4863
	14	312	41	59.3	3 27	42.1	2	1.6	6	58	52.4	9.621 0840	9.812 1530	9.816 9518
	15	316	12	10.4	3 32	43.6	+ 0	28.0	7	0	6.8	9.615 9111	9.821 8753	9.826 9163
	16	319	47	33.5	3 38	6.1	- 1	8.3	- 6	59	46.3	9.610 4869	9.832 0673	9.837 3208
	17	323	28	29.8	3 43	50.2	2	45.9	6	57	43.6	9.604 8197	9.842 6698	9.848 1069
	18	327	15	21.2	3 49	56.2	4	23.5	6	53	51.0	9.598 9200	9.853 6253	9.859 2181
	19	331	8	29.8	3 56	24.7	5	58.9	6	48	0.3	9.592 8013	9.864 8784	9.870 5993
	20	335	8	18.1	4 3	15.7	7	30.2	6	40	3.1	9.586 4797	9.876 3743	9.882 1966
	21	339	15	8.7	4 10	29.2	- 8	55.1	- 6	29	50.7	9.579 9760	9.888 0601	9.893 9584
	22	343	29	23.9	4 18	4.7	10	11.2	6	17	14.4	9.573 3145	9.899 8854	9.905 8351
	23	347	51	25.2	4 26	1.8	11	15.7	6	2	6.0	9.566 5254	9.911 8015	9.917 7786
	24	352	21	33.0	4 34	17.5	12	5.8	5	44	17.3	9.559 6440	9.923 7609	9.929 7425
	25	357	0	6.2	4 42	51.6	12	38.8	5	23	41.5	9.552 7122	9.935 7179	9.941 6814
	26	1	47	21.3	4 51	40.5	- 12	52.1	- 5	0	12.9	9.545 7785	9.947 6277	9.953 5512
	27	6	43	31.0	5 0	40.5	12	43.3	4	33	47.9	9.538 8983	9.959 4466	9.965 3085
	28	11	48	44.6	5 9	47.2	12	10.5	4	4	25.3	9.532 1346	9.971 1317	9.976 9110
	29	17	3	6.0	5 18	55.0	11	12.7	3	32	7.4	9.525 5575	9.982 6412	9.988 3167
	30	22	26	32.7	5 27	56.8	9	49.6	2	57	0.5	9.519 2437	9.993 9325	9.999 4836
Aug.	31	27	58	54.9	5 36	44.7	- 8	2.5	- 2	19	15.5	9.513 2755	0.004 9654	0.010 3725
	1	33	39	54.4	5 45	9.7	5	53.8	1	39	8.7	9.507 7393	0.015 7001	0.020 9434
	2	39	29	3.3	5 53	1.8	3	27.5	0	57	2.4	9.502 7229	0.026 0977	0.031 1584
	3	45	25	43.6	6 0	10.7	- 0	49.2	- 0	13	24.3	9.498 3127	0.036 1211	0.040 9817
	4	51	29	6.8	6 6	25.8	+ 1	54.2	+ 0	31	12.1	9.494 5909	0.045 7359	0.050 3799
	5	57	38	13.8	6 11	36.7	+ 4	34.9	+ 1	16	8.4	9.491 6313	0.054 9100	0.059 3231
	6	63	51	55.5	6 15	33.7	7	4.6	2	0	43.0	9.489 4959	0.063 6162	0.067 7863
	7	70	8	54.1	6 18	9.1	9	15.1	2	44	12.0	9.488 2308	0.071 8305	0.075 7469
	8	76	27	44.7	6 19	17.1	10	59.2	3	25	51.8	9.487 8642	0.079 5339	0.083 1900
	9	82	46	58.2	6 18	54.6	12	11.4	4	5	1.0	9.488 4044	0.086 7139	0.090 1050
	10	89	5	3.6	6 17	1.1	+ 12	47.9	+ 4	41	2.4	9.489 8395	0.093 3630	0.096 4876
	11	95	20	31.1	6 13	39.6	12	47.5	5	13	24.7	9.492 1373	0.099 4792	0.102 3383
	12	101	31	55.2	6 8	55.5	12	11.2	5	41	44.0	9.495 2485	0.105 0660	0.107 6633
	13	107	37	57.3	6 2	56.8	11	2.3	6	5	44.1	9.499 1085	0.110 1318	0.112 4734
	14	113	37	27.5	5 55	53.5	9	25.6	6	25	16.6	9.503 6418	0.114 6899	0.116 7833
	15	119	29	26.6	5 47	56.7	+ 7	27.3	+ 6	40	20.8	9.508 7650	0.118 7561	0.120 6109
	16	125	13	6.9	5 39	17.8	+ 5	13.8	+ 6	51	2.6	9.514 3910	0.122 3502	0.123 9768

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.			Reduction to Orbit.			Heliocentric Latitude.			Daily Motion.			Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"		At Date.	At Intermediate Date.
Aug. 16	125	13	6.9	5	39	17.8	+	5	13.8	+ 6	51	2.6	+	8	33.8	9.514 3910	0.122 3502	0.123 9768
17	130	47	52.0	5	30	8.3		2	51.8	6	57	32.9	+	29.3		9.520 4321	0.125 4935	0.126 9032
18	136	13	16.9	5	20	39.1	+	0	27.6	7	0	6.9	+	0	41.6	9.526 8026	0.128 2086	0.129 4125
19	141	29	6.9	5	11	0.1	-	1	53.4	6	59	2.7	-	2	46.8	9.533 4213	0.130 5181	0.131 5284
20	146	35	16.8	5	1	20.0		4	6.5	6	54	40.0		5	55.2	9.540 2127	0.132 4461	0.133 2740
21	151	31	49.0	4	51	45.8	-	6	8.1	+ 6	47	19.2	-	8	43.0	9.547 1080	0.134 0150	0.134 6718
22	156	18	52.6	4	42	23.9		7	55.5	6	37	20.6		11	10.8	9.554 0456	0.135 2471	0.135 7434
23	160	56	42.3	4	33	18.6		9	27.0	6	25	3.9		13	19.5	9.560 9713	0.136 1634	0.136 5095
24	165	25	36.6	4	24	33.6		10	41.6	6	10	47.7		15	10.1	9.567 8380	0.136 7840	0.136 9891
25	169	45	57.1	4	16	11.4		11	39.0	5	54	49.2		16	44.2	9.574 6052	0.137 1270	0.137 2000
26	173	58	7.6	4	8	13.8	-	12	19.4	+ 5	37	24.2	-	18	3.4	9.581 2385	0.137 2099	0.137 1586
27	178	2	33.1	4	0	41.5		12	43.5	5	18	46.9		19	9.1	9.587 7092	0.137 0480	0.136 8798
28	181	59	39.2	3	53	35.1		12	52.2	4	59	10.0		20	2.8	9.593 9933	0.136 6556	0.136 3770
29	185	49	52.0	3	46	54.7		12	46.6	4	38	44.8		20	45.9	9.600 0712	0.136 0455	0.135 6625
30	189	33	37.1	3	40	39.7		12	28.0	4	17	41.3		21	19.7	9.605 9271	0.135 2294	0.134 7474
31	193	11	19.8	3	34	49.7	-	11	57.6	+ 3	56	8.0	-	21	45.4	9.611 5483	0.134 2176	0.133 6411
Sept. 1	196	43	24.7	3	29	24.0		11	17.0	3	34	12.4		22	4.1	9.616 9248	0.133 0189	0.132 3520
2	200	10	15.6	3	24	21.6		10	27.4	3	12	1.5		22	16.8	9.622 0488	0.131 6414	0.130 8880
3	203	32	15.5	3	19	41.6		9	30.1	2	49	40.5		22	24.3	9.626 9146	0.130 0923	0.129 2548
4	206	49	46.4	3	15	23.1		8	26.4	2	27	14.4		22	27.1	9.631 5180	0.128 3764	0.127 4579
5	210	3	9.2	3	11	25.3	-	7	17.6	+ 2	4	47.5	-	22	26.0	9.635 8560	0.126 4999	0.125 5028
6	213	12	44.1	3	7	47.2		6	4.7	1	42	23.4		22	21.6	9.639 9266	0.124 4669	0.123 3926
7	216	18	50.2	3	4	27.9		4	48.7	1	20	5.4		22	14.0	9.643 7289	0.122 2803	0.121 1304
8	219	21	46.0	3	1	26.5		3	30.7	0	57	56.1		22	4.2	9.647 2624	0.119 9431	0.118 7186
9	222	21	49.0	2	58	42.2		2	11.5	0	35	57.7		21	52.2	9.650 5271	0.117 4571	0.116 1587
10	225	19	16.0	2	56	14.3	-	0	52.1	+ 0	14	12.4	-	21	38.2	9.653 5235	0.114 8235	0.113 4516
11	228	14	22.9	2	54	2.1	+	0	26.8	- 0	7	18.1		21	22.5	9.656 2524	0.112 0430	0.110 5977
12	231	7	25.3	2	52	5.1		1	44.5	0	28	32.1		21	5.3	9.658 7147	0.109 1155	0.107 5965
13	233	58	38.0	2	50	22.6		3	0.4	0	49	28.2		20	46.8	9.660 9112	0.106 0405	0.104 4473
14	236	48	15.2	2	48	54.1		4	13.7	1	10	5.3		20	27.1	9.662 8430	0.102 8168	0.101 1488
15	239	36	30.8	2	47	39.3	+	5	24.0	- 1	30	22.0	-	20	6.2	9.664 5112	0.099 4429	0.097 6987
16	242	23	38.3	2	46	37.8		6	30.8	1	50	17.3		19	44.2	9.665 9166	0.095 9160	0.094 0948
17	245	9	50.8	2	45	49.3		7	33.5	2	9	50.1		19	21.2	9.667 0599	0.092 2343	0.090 3340
18	247	55	21.2	2	45	13.4		8	31.6	2	28	59.4		18	57.2	9.667 9419	0.088 3937	0.086 4133
19	250	40	21.9	2	44	50.1		9	24.8	2	47	44.2		18	32.1	9.668 5632	0.084 3919	0.082 3288
20	253	25	5.5	2	44	39.1	+	10	12.8	- 3	6	3.3	-	18	5.9	9.668 9243	0.080 2235	0.078 0759
21	256	9	44.2	2	44	40.3		10	55.0	3	23	55.7		17	38.6	9.669 0254	0.075 8852	0.073 6506
22	258	54	30.2	2	44	53.7		11	31.2	3	41	20.2		17	10.1	9.668 8664	0.071 3715	0.069 0475
23	261	39	35.8	2	45	19.4		12	1.1	3	58	15.6		16	40.4	9.668 4474	0.066 6778	0.064 2615
24	264	25	13.1	2	45	57.3		12	24.4	4	14	40.6		16	9.2	9.667 7680	0.061 7981	0.059 2870
25	267	11	34.5	2	46	47.6	+	12	40.8	- 4	30	33.7	-	15	36.6	9.666 8278	0.056 7272	0.054 1180
26	269	58	52.5	2	47	50.4		12	50.1	4	45	53.3		15	2.4	9.665 6261	0.051 4585	0.048 7481
27	272	47	19.6	2	49	6.0		12	52.1	5	0	37.8		14	26.3	9.664 1623	0.045 9859	0.043 1711
28	275	37	8.8	2	50	34.5		12	46.6	5	14	45.3		13	48.3	9.662 4356	0.040 3029	0.037 3802
29	278	28	33.1	2	52	16.3		12	33.5	5	28	13.5		13	7.9	9.660 4450	0.034 4024	0.031 3687
30	281	21	46.0	2	54	11.9	+	12	12.7	- 5	41	0.3	-	12	25.2	9.658 1894	0.028 2783	0.025 1303
Oct. 1	284	17	1.5	2	56	21.5	+	11	44.1	- 5	53	3.0	-	11	39.8	9.655 6678	0.021 9238	0.018 6581

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—		
	°	'	"						At Date.	At Intermediate Date.	
Oct.	1	284	17	1.5	2 36 21.5	+ 11 44.1	- 5 53 3.0	- 11 39.8	9.655 6678	0.021 9238	0.018 6581
	2	287	14	33.8	2 58 45.6	11 7.7	6 4 19.0	10 51.5	9.652 8793	0.015 3325	0.011 9462
	3	290	14	37.7	3 1 24.7	10 23.5	6 14 45.0	9 59.9	9.649 8231	0.008 4986	0.004 9890
	4	293	17	28.5	3 4 19.5	9 31.7	6 24 17.7	9 4.7	9.646 4985	0.001 4168	9.997 7814
	5	296	23	22.0	3 7 30.4	8 32.5	6 32 53.2	8 5.6	9.642 9051	9.994 0826	9.990 3202
	6	299	32	34.9	3 10 58.2	+ 7 26.2	- 6 40 27.6	- 7 2.3	9.639 0430	9.986 4937	9.982 6026
	7	302	45	24.1	3 14 43.4	6 13.0	6 46 56.3	5 54.1	9.634 9127	9.978 6474	9.974 6284
	8	306	2	7.6	3 18 46.7	4 53.6	6 52 14.2	4 40.8	9.630 5153	9.970 5459	9.966 4002
	9	309	23	3.8	3 23 8.9	3 28.6	6 56 16.1	3 21.9	9.625 8532	9.962 1924	9.957 9236
	10	312	48	32.1	3 27 50.8	1 58.8	6 58 56.0	1 56.8	9.620 9297	9.953 5952	9.949 2086
	11	316	18	52.5	3 32 53.1	+ 0 25.1	- 7 0 7.6	- 0 25.2	9.615 7491	9.944 7664	9.940 2708
	12	319	54	25.4	3 38 16.3	- 1 11.2	6 59 44.1	+ 1 13.4	9.610 3173	9.935 7249	9.931 1321
	13	323	35	32.2	3 44 1.0	2 48.9	6 57 38.2	2 59.7	9.604 6429	9.926 4967	9.921 8234
	14	327	22	34.7	3 50 7.7	4 26.4	6 53 42.1	4 53.9	9.598 7363	9.917 1177	9.912 3856
	15	331	15	55.1	3 56 36.9	6 1.7	6 47 47.6	6 56.5	9.592 6109	9.907 6343	9.902 8720
	16	335	15	56.1	4 3 28.7	- 7 32.9	- 6 39 46.3	+ 9 7.5	9.586 2835	9.898 1075	9.893 3508
	17	339	23	0.0	4 10 42.8	8 57.6	6 29 29.7	11 27.3	9.579 7743	9.888 6132	9.883 9072
	18	343	37	29.0	4 18 18.9	10 13.3	6 16 48.9	13 55.7	9.573 1085	9.879 2467	9.874 6468
	19	347	59	44.9	4 26 16.2	11 17.4	6 1 35.6	16 32.2	9.566 3158	9.870 1237	9.865 6953
	20	352	30	8.0	4 34 33.1	12 7.1	5 43 42.0	19 16.2	9.559 4322	9.861 3811	9.857 2019
	21	357	8	57.0	4 43 7.6	- 12 39.6	- 5 23 1.0	+ 22 6.7	9.552 4996	9.853 1797	9.849 3375
	22	1	56	28.1	4 51 56.9	12 52.2	4 59 27.0	25 1.9	9.545 5667	9.845 6999	9.842 2922
	23	6	52	54.5	5 0 57.3	12 42.7	4 32 56.5	27 59.3	9.538 6889	9.839 1402	9.836 2699
	24	11	58	24.9	5 10 4.1	12 9.1	4 3 28.5	30 56.2	9.531 9298	9.833 7078	9.831 4801
	25	17	13	3.1	5 19 11.8	11 10.5	3 31 5.3	33 49.0	9.525 3594	9.829 6118	9.828 1264
	26	22	36	46.5	5 28 13.3	- 9 46.7	- 2 55 53.3	+ 36 33.2	9.519 0546	9.827 0456	9.826 3887
	27	28	9	24.9	5 37 0.6	7 58.9	2 18 3.7	39 3.4	9.513 0985	9.826 1725	9.826 4109
	28	33	50	39.9	5 45 24.6	5 49.5	1 37 52.9	41 14.4	9.507 5767	9.827 1128	9.828 2833
	29	39	40	3.2	5 53 15.7	3 22.8	0 55 43.3	43 0.1	9.502 5772	9.829 9236	9.832 0318
	30	45	36	56.8	6 0 23.2	- 0 44.2	- 0 12 2.9	44 14.9	9.498 1869	9.834 5970	9.837 6102
31	51	40	31.7	6 6 36.4	+ 1 59.2	+ 0 32 34.7	+ 44 53.7	9.494 4873	9.841 0542	9.844 9089	
Nov.	1	57	49	48.3	6 11 45.1	4 39.7	1 17 31.1	44 52.0	9.491 5520	9.849 1515	9.853 7561
	2	64	3	37.3	6 15 39.8	7 8.9	2 2 4.2	44 7.0	9.489 4425	9.849 6941	9.863 9354
	3	70	20	40.6	6 18 12.6	9 18.8	2 45 30.6	42 38.0	9.488 2046	9.869 4490	9.875 2033
	4	76	39	33.4	6 19 18.0	11 2.0	3 27 6.4	40 26.3	9.487 8659	9.881 1665	9.887 3068
	5	82	58	46.3	6 18 52.6	+ 12 13.1	+ 4 6 10.3	+ 37 35.2	9.488 4337	9.893 5938	9.899 9977
	6	89	16	48.3	6 16 56.4	12 48.4	4 42 5.5	34 9.8	9.489 8960	9.906 4903	9.913 0450
	7	95	32	9.8	6 13 32.2	12 46.8	5 14 20.7	30 16.7	9.492 2196	9.919 6369	9.926 2430
	8	101	43	25.3	6 8 45.7	12 9.6	5 42 32.2	26 3.8	9.495 3547	9.932 8426	9.939 4166
	9	107	49	16.5	6 2 45.0	10 59.7	6 6 24.1	21 38.8	9.499 2366	9.945 9477	9.952 4204
	10	113	48	33.8	5 55 39.8	+ 9 22.3	+ 6 25 48.4	+ 17 9.7	9.503 7902	9.958 8213	9.965 1389
	11	119	40	18.4	5 47 41.4	7 23.3	6 40 44.5	12 43.6	9.508 9293	9.971 3631	9.977 4849
	12	125	23	42.8	5 39 1.4	5 9.5	6 51 18.3	8 26.1	9.514 5695	9.983 4972	9.989 3042
	13	130	58	11.1	5 29 51.1	2 47.4	6 57 41.1	4 22.1	9.520 6220	9.995 1711	0.000 8238
	14	136	23	18.6	5 20 21.5	+ 0 23.2	7 0 8.1	+ 0 35.0	9.527 0015	0.006 3494	0.011 7460
	15	141	38	51.0	5 10 42.4	- 1 57.6	+ 6 58 57.5	- 2 53.0	9.533 6267	0.017 0125	0.022 1482
	16	146	44	43.0	5 1 2.3	- 4 10.4	+ 6 54 29.0	- 6 0.7	9.540 4224	0.027 1532	0.032 0277

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.			Reduction to Orbit.			Heliocentric Latitude.			Daily Motion.			Logarithm of Radius Vector.			Logarithm of Distance from Earth—	
																At Date.		At Intermediate Date.		
	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"					
Nov. 16	146	44	43.0	5	1	2.3	—	4	10.4	+ 6	54	29.0	—	6	0.7	9.540 4224	0.027 1532	0.032 0277		
17	151	40	57.6	4	51	28.4		6	11.6	6	47	3.0		8	47.9	9.547 3200	0.036 7726	0.041 3889		
18	156	27	44.1	4	42	6.9		7	58.5	6	36	59.9		11	15.1	9.554 2581	0.045 8782	0.050 2422		
19	161	5	17.1	4	33	2.2		9	29.5	6	24	39.2		13	23.1	9.561 1826	0.054 4831	0.058 6028		
20	165	33	55.3	4	24	18.0		10	43.6	6	10	19.6		15	13.2	9.568 0469	0.062 6037	0.066 4880		
21	169	54	0.5	4	15	56.4	—	11	40.6	+ 5	54	18.2	—	16	46.9	9.574 8106	0.070 2582	0.073 9168		
22	174	5	56.3	4	7	59.4		12	20.5	5	36	50.8		18	5.6	9.581 4395	0.077 4663	0.080 9092		
23	178	10	7.8	4	0	28.0		12	44.1	5	18	11.5		19	10.9	9.587 9049	0.084 2481	0.087 4855		
24	182	7	0.9	3	53	22.5		12	52.3	4	58	33.0		20	4.2	9.594 1830	0.090 6238	0.093 6656		
25	185	57	1.4	3	46	42.7		12	46.2	4	38	6.5		20	47.1	9.600 2544	0.096 6134	0.099 4691		
26	189	40	34.9	3	40	28.5	—	12	27.2	+ 4	17	1.9	—	21	20.7	9.606 1032	0.102 2353	0.104 9144		
27	193	18	6.8	3	34	39.4		11	56.5	3	55	27.8		21	46.2	9.611 7171	0.107 5085	0.110 0197		
28	196	50	1.7	3	29	14.3		11	15.6	3	33	31.8		22	4.7	9.617 0860	0.112 4501	0.114 8021		
29	200	16	43.3	3	24	12.7		10	25.7	3	11	20.3		22	17.2	9.622 2022	0.117 0771	0.119 2771		
30	203	38	34.6	3	19	33.5		9	28.2	2	48	59.1		22	24.4	9.627 0601	0.121 4039	0.123 4596		
Dec. 1	206	55	57.5	3	15	15.7	—	8	24.4	+ 2	26	33.0	—	22	27.2	9.631 6554	0.125 4457	0.127 3638		
2	210	9	12.9	3	11	18.5		7	15.4	2	4	6.1		22	26.0	9.635 9851	0.129 2153	0.131 0019		
3	213	18	41.1	3	7	41.0		6	2.3	1	41	42.2		22	21.3	9.640 0475	0.132 7251	0.134 3863		
4	216	24	41.1	3	4	22.1		4	46.3	1	19	24.4		22	13.9	9.643 8416	0.135 9867	0.137 5276		
5	219	27	31.4	3	1	21.2		3	28.2	0	57	15.3		22	3.9	9.647 3669	0.139 0102	0.140 4356		
6	222	27	29.3	2	58	37.4	—	2	9.1	+ 0	35	17.3	—	21	51.8	9.650 6234	0.141 8050	0.143 1194		
7	225	24	51.7	2	56	10.0	—	0	49.7	+ 0	13	32.4		21	37.7	9.653 6117	0.144 3799	0.145 5874		
8	228	19	54.5	2	53	58.3	+	0	29.2	—	0	7	57.5		21	21.9	9.656 3324	0.146 7428	0.147 8472	
9	231	12	53.3	2	52	1.7		1	46.9	0	29	11.0		21	4.7	9.658 7865	0.148 9008	0.149 9048		
10	234	4	2.8	2	50	19.6		3	2.7	0	50	6.6		20	46.2	9.660 9749	0.150 8598	0.151 7666		
11	236	53	37.2	2	48	51.5	+	4	15.9	—	1	10	43.0	—	20	26.4	9.662 8986	0.152 6258	0.153 4381	
12	239	41	50.5	2	47	37.2		5	26.1	1	30	59.1		20	5.5	9.664 5586	0.154 2040	0.154 9239		
13	242	28	56.1	2	46	36.1		6	32.8	1	50	53.7		19	43.5	9.665 9558	0.155 5982	0.156 2275		
14	245	15	7.1	2	45	48.0		7	35.3	2	10	25.8		19	20.5	9.667 0911	0.156 8122	0.157 3526		
15	248	0	36.3	2	45	12.5		8	33.3	2	29	34.4		18	56.4	9.667 9651	0.157 8492	0.158 3025		
16	250	45	36.3	2	44	49.6	+	9	26.4	—	2	48	18.4	—	18	31.3	9.668 5784	0.158 7125	0.159 0794	
17	253	30	19.6	2	44	38.9		10	14.1	3	6	36.7		18	5.1	9.668 9314	0.159 4033	0.159 6846		
18	256	14	58.3	2	44	40.5		10	56.2	3	24	28.2		17	37.8	9.669 0244	0.159 9233	0.160 1197		
19	258	59	44.7	2	44	54.3		11	32.2	3	41	51.9		17	9.3	9.668 8574	0.160 2737	0.160 3854		
20	261	44	51.0	2	45	20.3		12	1.9	3	58	46.4		16	39.5	9.668 4303	0.160 4548	0.160 4819		
21	264	30	29.5	2	45	58.7	+	12	25.0	—	4	15	10.4	—	16	8.2	9.667 7428	0.160 4665	0.160 4087	
22	267	16	52.5	2	46	49.3		12	41.2	4	31	2.4		15	35.6	9.666 7946	0.160 3083	0.160 1651		
23	270	4	12.4	2	47	52.5		12	50.3	4	46	21.1		15	1.4	9.665 5849	0.159 9790	0.159 7497		
24	272	52	41.8	2	49	8.5		12	52.0	5	1	4.5		14	25.0	9.664 1130	0.159 4769	0.159 1604		
25	275	42	33.7	2	50	37.5		12	46.3	5	15	10.7		13	47.0	9.662 3781	0.158 7999	0.158 3952		
26	278	34	1.2	2	52	19.7	+	12	33.0	—	5	28	37.7	—	13	6.6	9.660 3791	0.157 9456	0.157 4506	
27	281	27	17.7	2	54	15.6		12	12.0	5	41	23.2		12	23.7	9.658 1152	0.156 9098	0.156 3230		
28	284	22	37.2	2	56	25.7		11	43.1	5	53	24.5		11	38.4	9.655 5854	0.155 6894	0.155 0083		
29	287	20	14.0	2	58	50.3		11	6.4	6	4	39.0		10	50.0	9.652 7886	0.154 2791	0.153 5012		
30	290	20	22.8	3	1	29.9		10	22.0	6	15	3.4		9	58.3	9.649 7240	0.152 6738	0.151 7962		
31	293	23	19.0	3	4	25.1	+	9	30.0	—	6	24	34.4	—	9	3.0	9.646 3911	0.150 8678	0.149 8874	
32	296	29	18.5	3	7	36.5	+	8	30.6	—	6	33	8.2	—	8	3.8	9.642 7894	0.148 8541	0.147 7670	

VENUS.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
Jan. 1	343 51 52.6	1 35 13.3	+ 0 12.5	- 3 23 30.2	- 0 11.7	9.861 7736	0.162 9826	0.161 6515
3	347 2 21.7	1 35 15.8	- 0 7.5	3 23 35.0	+ 0 7.0	9.861 6787	0.160 3052	0.158 9443
5	350 12 56.0	1 35 18.4	0 27.4	3 23 2.3	0 25.7	9.861 5766	0.157 5686	0.156 1781
7	353 23 35.5	1 35 21.0	0 47.1	3 21 52.2	0 44.3	9.861 4676	0.154 7730	0.153 3527
9	356 34 20.2	1 35 23.7	1 6.1	3 20 4.9	1 2.9	9.861 3519	0.151 9170	0.150 4655
11	359 45 10.5	1 35 26.3	- 1 24.4	- 3 17 40.6	+ 1 21.3	9.861 2299	0.148 9984	0.147 5157
13	2 56 6.3	1 35 29.3	1 41.6	3 14 39.8	1 39.5	9.861 1019	0.146 0175	0.144 5039
15	6 7 7.8	1 35 32.1	1 57.6	3 11 2.9	1 57.4	9.860 9684	0.142 9746	0.141 4294
17	9 18 15.0	1 35 35.0	2 12.1	3 6 50.5	2 14.9	9.860 8298	0.139 8682	0.138 2908
19	12 29 27.9	1 35 37.9	2 25.0	3 2 3.4	2 32.1	9.860 6865	0.136 6972	0.135 0872
21	15 40 46.8	1 35 40.9	- 2 36.1	- 2 56 42.3	+ 2 48.8	9.860 5388	0.133 4606	0.131 8173
23	18 52 11.7	1 35 43.9	2 45.3	2 50 48.2	3 5.1	9.860 3873	0.130 1571	0.128 4797
25	22 3 42.6	1 35 47.0	2 52.5	2 44 22.1	3 20.8	9.860 2325	0.126 7850	0.125 0729
27	25 15 19.7	1 35 50.1	2 57.5	2 37 25.2	3 36.0	9.860 0747	0.123 3430	0.121 5948
29	28 27 3.0	1 35 53.2	3 0.4	2 29 58.6	3 50.5	9.859 9144	0.119 8282	0.118 0428
31	31 38 52.6	1 35 56.4	- 3 1.0	- 2 22 3.7	+ 4 4.3	9.859 7523	0.116 2387	0.114 4150
Feb. 2	34 50 48.5	1 35 59.6	2 59.3	2 13 41.9	4 17.4	9.859 5887	0.112 5716	0.110 7082
4	38 2 50.9	1 36 2.8	2 55.4	2 4 54.8	4 29.6	9.859 4242	0.108 8244	0.106 9199
6	41 14 59.9	1 36 6.1	2 49.3	1 55 43.9	4 41.1	9.859 2592	0.104 9945	0.103 0482
8	44 27 15.5	1 36 9.5	2 41.1	1 46 10.9	4 51.7	9.859 0944	0.101 0807	0.099 0918
10	47 39 37.9	1 36 12.9	- 2 30.8	- 1 36 17.5	+ 5 1.5	9.858 9302	0.097 0813	0.095 0489
12	50 52 7.1	1 36 16.3	2 18.7	1 26 5.6	5 10.3	9.858 7671	0.092 9946	0.090 9181
14	54 4 43.1	1 36 19.8	2 4.8	1 15 37.0	5 18.1	9.858 6056	0.088 8193	0.086 6978
16	57 17 26.1	1 36 23.3	1 49.3	1 4 53.7	5 24.9	9.858 4464	0.084 5535	0.082 3863
18	60 30 16.2	1 36 26.8	1 32.5	0 53 57.7	5 30.8	9.858 2898	0.080 1959	0.077 9819
20	63 43 13.4	1 36 30.3	- 1 14.4	- 0 42 51.0	+ 5 35.6	9.858 1363	0.075 7440	0.073 4822
22	66 56 17.7	1 36 33.9	0 55.4	0 31 35.8	5 39.4	9.857 9865	0.071 1960	0.068 8853
24	70 9 29.3	1 36 37.5	0 35.8	0 20 14.1	5 42.0	9.857 8409	0.066 5496	0.064 1884
26	73 22 48.0	1 36 41.1	- 0 15.6	- 0 8 48.2	5 43.6	9.857 6998	0.061 8015	0.059 3882
28	76 36 13.9	1 36 44.7	+ 0 4.8	+ 0 2 39.9	5 44.2	9.857 5639	0.056 9483	0.054 4813
Mar. 1	79 49 47.0	1 36 48.3	+ 0 25.1	+ 0 14 7.9	+ 5 43.6	9.857 4334	0.051 9866	0.049 4637
3	83 3 27.2	1 36 51.8	0 45.1	0 25 33.6	5 41.9	9.857 3089	0.046 9121	0.044 3315
5	86 17 14.5	1 36 55.4	1 4.5	0 36 54.8	5 39.1	9.857 1907	0.041 7214	0.039 0814
7	89 31 8.9	1 36 58.8	1 23.2	0 48 9.3	5 35.2	9.857 0792	0.036 4110	0.033 7098
9	92 45 10.0	1 37 2.2	1 40.8	0 59 15.0	5 30.3	9.856 9748	0.030 9777	0.028 2145
11	95 59 17.8	1 37 5.5	+ 1 57.1	+ 1 10 9.7	+ 5 24.2	9.856 8779	0.025 4196	0.022 5924
13	99 13 32.2	1 37 8.7	2 11.9	1 20 51.2	5 17.1	9.856 7887	0.019 7329	0.016 8411
15	102 27 52.8	1 37 11.7	2 25.1	1 31 17.4	5 8.9	9.856 7075	0.013 9163	0.010 9580
17	105 42 19.3	1 37 14.7	2 36.4	1 41 26.4	4 59.8	9.856 6347	0.007 9659	0.004 9397
19	108 56 51.6	1 37 17.5	2 45.7	1 51 16.1	4 49.7	9.856 5704	0.001 8790	9.998 7839
21	112 11 29.2	1 37 20.0	+ 2 52.8	+ 2 0 44.6	+ 4 38.6	9.856 5149	9.995 6532	9.992 4868
23	115 26 11.7	1 37 22.3	2 57.8	2 9 50.0	4 26.6	9.856 4684	9.989 2842	9.986 0448
25	118 40 58.9	1 37 24.5	3 0.5	2 18 30.6	4 13.7	9.856 4309	9.982 7683	9.979 4543
27	121 55 50.1	1 37 26.4	3 0.9	2 26 44.6	4 0.1	9.856 4027	9.976 1018	9.972 7101
29	125 10 44.8	1 37 28.1	2 58.9	2 34 30.4	3 45.6	9.856 3838	9.969 2787	9.965 8070
31	128 25 42.7	1 37 29.5	+ 2 54.7	+ 2 41 46.5	+ 3 30.3	9.856 3743	9.962 2941	9.958 7391
Apr. 2	131 40 43.0	1 37 30.5	+ 2 48.2	+ 2 48 31.4	+ 3 14.4	9.856 3743	9.955 1416	9.951 5009

VENUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.			Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth.	
	°	'	"			°	'	"			At Date.	At Intermediate Date.
Apr.	2	131	40	43.0	1 37 30.5	+ 2	48.2	+ 2 48 31.4	+ 3 14.4	9.856 3743	9.955 1416	9.951 5009
	4	134	55	45.2	1 37 31.4	2 39.5	2 54 43.8	2 54 43.8	2 57.9	9.856 3838	9.947 8165	9.944 0877
	6	138	10	48.8	1 37 31.9	2 28.8	3 0 22.5	3 0 22.5	2 40.8	9.856 4025	9.940 3138	9.936 4941
	8	141	25	53.1	1 37 32.0	2 16.2	3 5 26.4	3 5 26.4	2 23.1	9.856 4305	9.932 6283	9.928 7160
	10	144	40	57.3	1 37 31.9	2 1.8	3 9 54.5	3 9 54.5	2 4.9	9.856 4678	9.924 7565	9.920 7492
	12	147	56	0.8	1 37 31.4	+ 1 45.9	+ 3 13 45.9	+ 3 13 45.9	+ 1 46.4	9.856 5143	9.916 6936	9.912 5890
	14	151	11	2.9	1 37 30.5	1 28.6	3 17 0.0	3 17 0.0	1 27.6	9.856 5697	9.908 4351	9.904 2314
	16	154	26	3.0	1 37 29.3	1 10.2	3 19 36.1	3 19 36.1	1 8.5	9.856 6338	9.899 9774	9.895 6726
	18	157	41	0.2	1 37 27.7	0 50.9	3 21 33.7	3 21 33.7	0 49.1	9.856 7066	9.891 3162	9.886 9077
	20	160	55	54.0	1 37 25.8	0 30.9	3 22 52.5	3 22 52.5	0 29.6	9.856 7876	9.882 4467	9.877 9330
	22	164	10	43.5	1 37 23.5	+ 0 10.6	+ 3 23 32.3	+ 3 23 32.3	+ 0 10.1	9.856 8767	9.873 3654	9.868 7429
	24	167	25	28.2	1 37 20.9	- 0 9.9	3 23 33.0	3 23 33.0	- 0 9.4	9.856 9736	9.864 0650	9.859 3308
	26	170	40	7.3	1 37 18.0	0 30.2	3 22 54.6	3 22 54.6	0 28.9	9.857 0779	9.854 5397	9.849 6910
	28	173	54	40.3	1 37 14.7	0 50.1	3 21 37.3	3 21 37.3	0 48.3	9.857 1893	9.844 7836	9.839 8166
	30	177	9	6.5	1 37 11.2	1 9.4	3 19 41.4	3 19 41.4	1 7.5	9.857 3075	9.834 7892	9.829 7006
May	2	180	23	25.2	1 37 7.3	- 1 27.8	+ 3 17 7.4	+ 3 17 7.4	- 1 26.4	9.857 4320	9.824 5502	9.819 3370
	4	183	37	36.0	1 37 3.2	1 45.2	3 13 55.9	3 13 55.9	1 45.0	9.857 5624	9.814 0605	9.808 7201
	6	186	51	38.4	1 36 58.9	2 1.1	3 10 7.5	3 10 7.5	2 3.2	9.857 6984	9.803 3153	9.797 8453
	8	190	5	31.7	1 36 54.2	2 15.4	3 5 43.0	3 5 43.0	2 21.1	9.857 8394	9.792 3102	9.786 7098
	10	193	19	15.6	1 36 49.5	2 28.1	3 0 43.3	3 0 43.3	2 38.5	9.857 9851	9.781 0437	9.775 3111
	12	196	32	49.8	1 36 44.5	- 2 38.8	+ 2 55 9.5	+ 2 55 9.5	- 2 55.2	9.858 1349	9.769 5125	9.763 6477
	14	199	46	13.8	1 36 39.4	2 47.6	2 49 2.8	2 49 2.8	3 11.4	9.858 2883	9.757 7170	9.751 7206
	16	202	59	27.5	1 36 34.2	2 54.2	2 42 24.3	2 42 24.3	3 26.9	9.858 4450	9.745 6589	9.739 5323
	18	206	12	30.5	1 36 28.8	2 58.6	2 35 15.4	2 35 15.4	3 41.8	9.858 6043	9.733 3414	9.727 0868
	20	209	25	22.7	1 36 23.4	3 0.8	2 27 37.5	2 27 37.5	3 56.0	9.858 7658	9.720 7692	9.714 3891
	22	212	38	4.0	1 36 17.9	- 3 0.7	+ 2 19 32.2	+ 2 19 32.2	- 4 9.3	9.858 9290	9.707 9479	9.701 4465
	24	215	50	34.3	1 36 12.4	2 58.3	2 11 1.0	2 11 1.0	4 21.7	9.859 0933	9.694 8865	9.688 2689
	26	219	2	53.7	1 36 6.9	2 53.7	2 2 5.6	2 2 5.6	4 33.4	9.859 2582	9.681 5960	9.674 8696
	28	222	15	2.0	1 36 1.5	2 46.9	1 52 47.8	1 52 47.8	4 44.2	9.859 4233	9.668 0920	9.661 2653
	30	225	26	59.5	1 35 56.1	2 38.1	1 43 9.3	1 43 9.3	4 54.1	9.859 5879	9.654 3933	9.647 4795
June	1	228	38	46.4	1 35 50.8	- 2 27.3	+ 1 33 11.9	+ 1 33 11.9	- 5 3.0	9.859 7516	9.640 5280	9.633 5435
	3	231	50	22.9	1 35 45.7	2 14.7	1 22 57.6	1 22 57.6	5 11.0	9.859 9140	9.626 5315	9.619 4980
	5	235	1	49.1	1 35 40.7	2 0.4	1 12 28.4	1 12 28.4	5 18.0	9.860 0744	9.612 4498	9.605 3945
	7	238	13	5.4	1 35 35.8	1 44.6	1 1 46.2	1 1 46.2	5 24.0	9.860 2324	9.598 3405	9.591 2967
	9	241	24	12.3	1 35 31.1	1 27.6	0 50 52.9	0 50 52.9	5 29.0	9.860 3875	9.584 2733	9.577 2818
	11	244	35	9.8	1 35 26.6	- 1 9.4	+ 0 39 50.7	+ 0 39 50.7	- 5 33.0	9.860 5392	9.570 3341	9.563 4434
	13	247	45	58.6	1 35 22.4	0 50.5	0 28 41.6	0 28 41.6	5 36.0	9.860 6871	9.556 6242	9.549 8920
	15	250	56	39.1	1 35 18.3	0 30.9	0 17 27.7	0 17 27.7	5 37.9	9.860 8308	9.543 2627	9.536 7529
	17	254	7	11.8	1 35 14.6	- 0 11.0	+ 0 6 11.0	+ 0 6 11.0	5 38.7	9.860 9697	9.530 3814	9.524 1672
	19	257	17	37.3	1 35 11.1	+ 0 9.1	- 0 5 6.4	- 0 5 6.4	5 38.5	9.861 1035	9.518 1305	9.512 2915
	21	260	27	55.9	1 35 7.8	+ 0 29.0	- 0 16 22.5	- 0 16 22.5	- 5 37.3	9.861 2318	9.506 6707	9.501 2895
	23	263	38	8.3	1 35 4.8	0 48.6	0 27 35.3	0 27 35.3	5 35.1	9.861 3541	9.496 1693	9.491 3316
	25	266	48	15.0	1 35 2.1	1 7.6	0 38 42.6	0 38 42.6	5 31.9	9.861 4703	9.486 7990	9.482 5942
	27	269	58	16.6	1 34 59.7	1 25.7	0 49 42.4	0 49 42.4	5 27.7	9.861 5798	9.478 7370	9.475 2470
	29	273	8	13.8	1 34 57.6	1 42.7	1 0 32.8	1 0 32.8	5 22.5	9.861 6824	9.472 1427	9.469 4419
July	1	276	18	7.0	1 34 55.8	+ 1 58.5	- 1 11 11.8	- 1 11 11.8	- 5 16.3	9.861 7777	9.467 1602	9.465 3118
	3	279	27	56.8	1 34 54.2	+ 2 12.9	- 1 21 37.5	- 1 21 37.5	- 5 9.2	9.861 8655	9.463 9078	9.462 9566

VENUS.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
July 1	276 18 7.0	1 34 55.8	+ 1 58.5	- 1 11 11.8	- 5 16.3	9.861 7777	9.467 1602	9.465 3118
3	279 27 56.8	1 34 54.2	2 12.9	1 21 37.5	5 9.2	9.861 8655	9.463 9078	9.462 9566
5	282 37 43.8	1 34 53.0	2 25.7	1 31 48.1	5 1.2	9.861 9455	9.462 4638	9.462 4323
7	285 47 28.7	1 34 52.1	2 36.6	1 41 41.7	4 52.3	9.862 0175	9.462 8622	9.463 7508
9	288 57 11.9	1 34 51.3	2 45.7	1 51 16.5	4 42.5	9.862 0813	9.465 0923	9.466 8778
11	292 6 54.0	1 34 50.9	+ 2 52.7	- 2 0 30.9	- 4 31.8	9.862 1366	9.469 0959	9.471 7333
13	295 16 35.5	1 34 50.7	2 57.6	2 9 23.1	4 20.3	9.862 1834	9.474 7734	9.478 1980
15	298 26 17.1	1 34 50.9	3 0.3	2 17 51.7	4 8.1	9.862 2214	9.481 9872	9.486 1202
17	301 35 58.9	1 34 51.1	3 0.9	2 25 55.0	3 55.1	9.862 2506	9.490 5745	9.495 3269
19	304 45 41.6	1 34 51.7	2 59.3	2 33 31.6	3 41.4	9.862 2709	9.500 3550	9.505 6363
21	307 55 25.8	1 34 52.5	+ 2 55.5	- 2 40 40.2	- 3 27.1	9.862 2822	9.511 1477	9.516 8668
23	311 5 11.7	1 34 53.5	2 49.5	2 47 19.5	3 12.1	9.862 2845	9.522 7725	9.528 8445
25	314 14 59.8	1 34 54.7	2 41.5	2 53 28.2	2 56.5	9.862 2778	9.535 0634	9.541 4110
27	317 24 50.4	1 34 56.0	2 31.5	2 59 5.3	2 40.5	9.862 2620	9.547 8699	9.554 4237
29	320 34 43.9	1 34 57.5	2 19.7	3 4 9.7	2 23.9	9.862 2373	9.561 0573	9.567 7568
31	323 44 40.7	1 34 59.2	+ 2 6.2	- 3 8 40.4	- 2 6.8	9.862 2038	9.574 5092	9.581 3025
Aug. 2	326 54 41.0	1 35 1.1	1 51.1	3 12 36.7	1 49.4	9.862 1613	9.588 1256	9.594 9686
4	330 4 45.1	1 35 3.1	1 34.7	3 15 57.9	1 31.7	9.862 1103	9.601 8225	9.608 6789
6	333 14 53.3	1 35 5.1	1 17.1	3 18 43.2	1 13.6	9.862 0507	9.615 5301	9.622 3692
8	336 25 5.7	1 35 7.3	0 58.5	3 20 52.1	0 55.3	9.861 9828	9.629 1900	9.635 9870
10	339 35 22.7	1 35 9.6	+ 0 39.3	- 3 22 24.3	- 0 36.8	9.861 9067	9.642 7549	9.649 4888
12	342 45 44.3	1 35 12.0	+ 0 19.5	3 23 19.4	- 0 18.2	9.861 8226	9.656 1845	9.662 8381
14	345 56 10.7	1 35 14.5	- 0 0.5	3 23 37.2	+ 0 0.5	9.861 7309	9.669 4460	9.676 0050
16	349 6 42.3	1 35 17.0	0 20.5	3 23 17.6	0 19.2	9.861 6318	9.682 5123	9.688 9653
18	352 17 19.0	1 35 19.6	0 40.3	3 22 20.5	0 37.8	9.861 5255	9.695 3620	9.701 7007
20	355 28 0.9	1 35 22.3	- 0 59.5	- 3 20 46.2	+ 0 56.4	9.861 4125	9.707 9800	9.714 1985
22	358 38 48.2	1 35 25.0	1 18.1	3 18 34.9	1 14.8	9.861 2929	9.720 3557	9.726 4511
24	1 49 41.0	1 35 27.8	1 35.7	3 15 46.8	1 33.1	9.861 1673	9.732 4839	9.738 4530
26	5 0 39.4	1 35 30.6	1 52.1	3 12 22.4	1 51.1	9.861 0359	9.744 3591	9.750 2024
28	8 11 43.5	1 35 33.5	2 7.2	3 8 22.4	2 8.8	9.860 8992	9.755 9830	9.761 7008
30	11 22 53.4	1 35 36.4	- 2 20.7	- 3 3 47.4	+ 2 26.1	9.860 7575	9.767 3564	9.772 9502
Sept. 1	14 34 9.2	1 35 39.3	2 32.5	2 58 38.1	2 43.0	9.860 6113	9.778 4823	9.783 9532
3	17 45 30.9	1 35 42.3	2 42.4	2 52 55.5	2 59.5	9.860 4611	9.789 3638	9.794 7147
5	20 56 58.6	1 35 45.4	2 50.2	2 46 40.5	3 15.4	9.860 3072	9.800 0065	9.805 2402
7	24 8 32.5	1 35 48.5	2 56.0	2 39 54.2	3 30.7	9.860 1502	9.810 4160	9.815 5344
9	27 20 12.5	1 35 51.6	- 2 59.6	- 2 32 37.9	+ 3 45.4	9.859 9906	9.820 5959	9.825 6011
11	30 31 58.9	1 35 54.8	3 1.0	2 24 52.8	3 59.5	9.859 8288	9.830 5503	9.835 4439
13	33 43 51.6	1 35 57.9	3 0.1	2 16 40.4	4 12.8	9.859 6654	9.840 2824	9.845 0662
15	36 55 50.7	1 36 1.2	2 57.0	2 8 2.1	4 25.3	9.859 5007	9.849 7959	9.854 4719
17	40 7 56.4	1 36 4.5	2 51.6	1 58 59.4	4 37.1	9.859 3354	9.859 0948	9.863 6653
19	43 20 8.7	1 36 7.8	- 2 44.2	- 1 49 34.0	+ 4 48.1	9.859 1700	9.868 1834	9.872 6502
21	46 32 27.7	1 36 11.2	2 34.6	1 39 47.6	4 58.1	9.859 0050	9.877 0663	9.881 4322
23	49 44 53.6	1 36 14.6	2 23.1	1 29 42.0	5 7.2	9.858 8408	9.885 7488	9.890 0170
25	52 57 26.4	1 36 18.1	2 9.8	1 19 19.1	5 15.4	9.858 6781	9.894 2372	9.898 4099
27	56 10 6.1	1 36 21.6	1 54.9	1 8 40.8	5 22.6	9.858 5173	9.902 5360	9.906 6165
29	59 22 52.9	1 36 25.1	- 1 38.5	- 0 57 49.1	+ 5 28.8	9.858 3590	9.910 6520	9.914 6435
Oct. 1	62 35 46.8	1 36 28.7	- 1 20.9	- 0 46 46.0	+ 5 34.0	9.858 2036	9.918 5914	9.922 4964

VENUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Interme- diate Date.
Oct. 1	62 35 46.8	1 36 28.7	- 1 20.9	- 0 46 46.0	+ 5 34.0	9.858 2036	9.918 5914	9.922 4964
3	65 48 47.9	1 36 32.3	1 2.2	0 35 33.6	5 38.1	9.858 0516	9.926 3592	9.930 1807
5	69 1 56.2	1 36 35.7	0 42.8	0 24 14.0	5 41.2	9.857 9036	9.933 9615	9.937 7022
7	72 15 11.7	1 36 39.5	0 22.7	0 12 49.3	5 43.2	9.857 7599	9.941 4033	9.945 0651
9	75 28 34.5	1 36 43.2	- 0 2.4	- 0 1 21.8	5 44.1	9.857 6211	9.948 6882	9.952 2733
11	78 42 4.6	1 36 46.8	+ 0 18.0	+ 0 10 6.4	+ 5 43.9	9.857 4877	9.955 8206	9.959 3301
13	81 55 41.9	1 36 50.4	0 38.1	0 21 33.1	5 42.6	9.857 3599	9.962 8023	9.966 2377
15	85 9 26.3	1 36 53.9	0 57.8	0 32 56.1	5 40.2	9.857 2384	9.969 6365	9.972 9992
17	88 23 17.8	1 36 57.4	1 16.7	0 44 13.2	5 36.7	9.857 1234	9.976 3261	9.979 6173
19	91 37 16.2	1 37 0.9	1 34.7	0 55 22.2	5 32.1	9.857 0153	9.982 8735	9.986 0950
21	94 51 21.5	1 37 4.4	+ 1 51.5	+ 1 6 21.0	+ 5 26.4	9.856 9145	9.989 2823	9.992 4358
23	98 5 33.4	1 37 7.5	2 6.9	1 17 7.3	5 19.7	9.856 8213	9.995 5559	9.998 6428
25	101 19 51.7	1 37 10.7	2 20.6	1 27 39.1	5 11.9	9.856 7361	0.001 6972	0.004 7195
27	104 34 16.2	1 37 13.7	2 32.6	1 37 54.4	5 3.1	9.856 6591	0.007 7102	0.010 6699
29	107 48 46.5	1 37 16.5	2 42.6	1 47 51.1	4 53.3	9.856 5905	0.013 5989	0.016 4976
31	111 3 22.4	1 37 19.1	+ 2 50.5	+ 1 57 27.3	+ 4 42.6	9.856 5306	0.019 3666	0.022 2063
Nov. 2	114 18 3.4	1 37 21.6	2 56.3	2 6 41.0	4 30.9	9.856 4797	0.025 0171	0.027 7997
4	117 32 49.2	1 37 23.9	2 59.8	2 15 30.5	4 18.4	9.856 4378	0.030 5543	0.033 2813
6	120 47 39.3	1 37 25.9	3 1.0	2 23 54.0	4 5.0	9.856 4051	0.035 9808	0.038 6531
8	124 2 33.2	1 37 27.7	2 59.9	2 31 49.9	3 50.8	9.856 3817	0.041 2986	0.043 9176
10	127 17 30.5	1 37 29.2	+ 2 56.5	+ 2 39 16.6	+ 3 35.8	9.856 3677	0.046 5101	0.049 0765
12	130 32 30.6	1 37 30.5	2 50.7	2 46 12.6	3 20.1	9.856 3631	0.051 6167	0.054 1310
14	133 47 32.8	1 37 31.4	2 42.8	2 52 36.5	3 3.7	9.856 3680	0.056 6195	0.059 0826
16	137 2 36.6	1 37 32.0	2 32.8	2 58 27.2	2 46.8	9.856 3824	0.061 5203	0.063 9329
18	140 17 41.3	1 37 32.4	2 20.9	3 3 43.5	2 29.4	9.855 4061	0.066 3205	0.068 6835
20	143 32 46.4	1 37 32.4	+ 2 7.1	+ 3 8 24.3	+ 2 11.3	9.856 4392	0.071 0221	0.073 3362
22	146 47 51.0	1 37 32.0	1 51.7	3 12 28.7	1 53.0	9.856 4814	0.075 6263	0.077 8927
24	150 2 54.5	1 37 31.3	1 34.8	3 15 56.0	1 34.2	9.856 5328	0.080 1357	0.082 3555
26	153 17 56.3	1 37 30.2	1 16.8	3 18 45.4	1 15.2	9.856 5930	0.084 5524	0.086 7269
28	156 32 55.6	1 37 29.0	0 57.8	3 20 56.6	0 56.0	9.856 6619	0.088 8792	0.091 0095
30	159 47 51.7	1 37 27.0	+ 0 38.0	+ 3 22 29.1	+ 0 36.5	9.856 7393	0.093 1182	0.095 2058
Dec. 2	163 2 43.8	1 37 24.9	+ 0 17.7	3 23 22.5	+ 0 16.9	9.856 8250	0.097 2725	0.099 3184
4	166 17 31.4	1 37 22.4	- 0 2.7	3 23 36.9	- 0 2.6	9.856 9185	0.101 3439	0.103 3493
6	169 32 13.6	1 37 19.6	0 23.1	3 23 12.2	0 22.1	9.857 0197	0.105 3347	0.107 3002
8	172 46 50.0	1 37 16.5	0 43.3	3 22 8.5	0 41.6	9.857 1282	0.109 2459	0.111 1722
10	176 1 19.8	1 37 13.0	- 1 2.8	+ 3 20 26.1	- 1 0.8	9.857 2436	0.113 0790	0.114 9664
12	179 15 42.4	1 37 9.3	1 21.6	3 18 5.4	1 19.8	9.857 3656	0.116 8346	0.118 6835
14	182 29 57.2	1 37 5.3	1 39.3	3 15 6.9	1 38.6	9.857 4937	0.120 5134	0.122 3243
16	185 44 3.8	1 37 1.0	1 55.7	3 11 31.2	1 57.0	9.857 6276	0.124 1163	0.125 8898
18	188 58 1.6	1 36 56.5	2 10.6	3 7 19.2	2 15.0	9.857 7668	0.127 6447	0.129 3810
20	192 11 50.0	1 36 51.8	- 2 23.9	+ 3 2 31.7	- 2 32.5	9.857 9108	0.131 0990	0.132 7988
22	195 25 28.8	1 36 46.9	2 35.3	2 57 9.7	2 49.4	9.858 0593	0.134 4805	0.136 1442
24	198 38 57.7	1 36 41.8	2 44.8	2 51 14.3	3 5.8	9.858 2116	0.137 7904	0.139 4191
26	201 52 16.2	1 36 36.6	2 52.1	2 44 46.7	3 21.6	9.858 3674	0.141 0306	0.142 6250
28	205 5 24.1	1 36 31.3	2 57.3	2 37 48.3	3 36.7	9.858 5261	0.144 2027	0.145 7639
30	208 18 21.3	1 36 25.8	- 3 0.3	+ 2 30 20.3	- 3 51.1	9.858 6872	0.147 3089	0.148 8380
32	211 31 7.5	1 36 20.4	- 3 1.0	+ 2 22 24.4	- 4 4.7	9.858 8503	0.150 3512	0.151 8487

MARS.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
Jan. 1	34 0 39.8	34 54.96	-26.6	-0 28 26.2	+65.40	0.159 1037	0.137 0380	0.139 5841
3	35 10 23.1	34 48.36	24.7	0 26 15.2	65.54	0.159 7869	0.142 1188	0.144 6420
5	36 19 53.1	34 41.74	22.8	0 24 4.0	65.63	0.160 4767	0.147 1536	0.149 6536
7	37 29 9.8	34 35.08	20.8	0 21 52.7	65.70	0.161 1728	0.152 1419	0.154 6183
9	38 38 13.2	34 28.38	18.8	0 19 41.2	65.74	0.161 8750	0.157 0830	0.159 5359
11	39 47 3.0	34 21.62	-16.7	-0 17 29.7	+65.76	0.162 5828	0.161 9771	0.164 4064
13	40 55 39.4	34 14.84	14.7	0 15 18.2	65.73	0.163 2959	0.166 8241	0.169 2302
15	42 4 2.2	34 8.03	12.6	0 13 6.7	65.69	0.164 0139	0.171 6248	0.174 0080
17	43 12 11.4	34 1.20	10.5	0 10 55.4	65.61	0.164 7366	0.176 3797	0.178 7402
19	44 20 6.9	33 54.36	8.4	0 8 44.3	65.51	0.165 4637	0.181 0894	0.183 4274
21	45 27 48.8	33 47.52	-6.3	-0 6 33.4	+65.37	0.166 1947	0.185 7542	0.188 0699
23	46 35 17.0	33 40.66	4.2	0 4 22.8	65.22	0.166 9294	0.190 3746	0.192 6682
25	47 42 31.5	33 33.80	-2.1	0 2 12.5	65.04	0.167 6674	0.194 9508	0.197 2222
27	48 49 32.2	33 26.94	0.0	-0 0 2.6	64.82	0.168 4085	0.199 4826	0.201 7319
29	49 56 19.2	33 20.08	+2.0	+0 2 6.8	64.59	0.169 1523	0.203 9701	0.206 1970
31	51 2 52.5	33 13.22	+4.1	+0 4 15.7	+64.33	0.169 8985	0.208 4125	0.210 6165
Feb. 2	52 9 12.1	33 6.36	6.2	0 6 24.1	64.05	0.170 6468	0.212 8088	0.214 9893
4	53 15 18.0	32 59.51	8.2	0 8 31.9	63.75	0.171 3969	0.217 1586	0.219 3149
6	54 21 10.2	32 52.68	10.3	0 10 39.1	63.43	0.172 1486	0.221 4600	0.223 5931
8	55 26 48.8	32 45.86	12.3	0 12 45.6	63.08	0.172 9014	0.225 7143	0.227 8238
10	56 32 13.8	32 39.06	+14.3	+0 14 51.4	+62.70	0.173 6552	0.229 9214	0.232 0072
12	57 37 25.1	32 32.28	16.2	0 16 56.5	62.32	0.174 4095	0.234 0813	0.236 1438
14	58 42 22.9	32 25.52	18.1	0 19 0.7	61.91	0.175 1643	0.238 1948	0.240 2341
16	59 47 7.3	32 18.79	20.0	0 21 4.1	61.48	0.175 9191	0.242 2620	0.244 2786
18	60 51 38.1	32 12.07	21.9	0 23 6.6	61.03	0.176 6737	0.246 2839	0.248 2779
20	61 55 55.6	32 5.40	+23.7	+0 25 8.3	+60.57	0.177 4279	0.250 2607	0.252 2322
22	62 59 59.8	31 58.75	25.5	0 27 9.0	60.09	0.178 1813	0.254 1925	0.256 1418
24	64 3 50.7	31 52.14	27.2	0 29 8.7	59.59	0.178 9337	0.258 0799	0.260 0068
26	65 7 28.4	31 45.55	28.9	0 31 7.3	59.08	0.179 6848	0.261 9225	0.263 8269
28	66 10 52.9	31 38.99	30.6	0 33 5.0	58.55	0.180 4345	0.265 7199	0.267 6013
Mar. 1	67 14 4.4	31 32.50	+32.2	+0 35 1.5	+58.00	0.181 1824	0.269 4712	0.271 3297
3	68 17 3.0	31 26.02	33.8	0 36 57.0	57.44	0.181 9282	0.273 1765	0.275 0116
5	69 19 48.6	31 19.59	35.3	0 38 51.3	56.87	0.182 6719	0.276 8349	0.278 6463
7	70 22 21.4	31 13.22	36.7	0 40 44.4	56.28	0.183 4131	0.280 4459	0.282 2337
9	71 24 41.5	31 6.90	38.1	0 42 36.4	55.67	0.184 1516	0.284 0097	0.285 7741
11	72 26 49.0	31 0.60	+39.4	+0 44 27.2	+55.06	0.184 8871	0.287 5268	0.289 2680
13	73 28 44.0	30 54.35	40.8	0 46 16.7	54.44	0.185 6195	0.290 9976	0.292 7157
15	74 30 26.5	30 48.16	42.0	0 48 4.9	53.80	0.186 3486	0.294 4225	0.296 1179
17	75 31 56.7	30 42.02	43.2	0 49 51.9	53.13	0.187 0741	0.297 8021	0.299 4749
19	76 33 14.7	30 35.95	44.3	0 51 37.6	52.49	0.187 7957	0.301 1366	0.302 7872
21	77 34 20.6	30 29.93	+45.3	+0 53 21.9	+51.81	0.188 5134	0.304 4267	0.306 0552
23	78 35 14.5	30 23.94	46.3	0 55 4.8	51.14	0.189 2269	0.307 6727	0.309 2792
25	79 35 56.5	30 18.03	47.3	0 56 46.4	50.46	0.189 9361	0.310 8746	0.312 4589
27	80 36 26.7	30 12.19	48.2	0 58 26.7	49.76	0.190 6407	0.314 0321	0.315 5942
29	81 36 45.3	30 6.38	49.0	1 0 5.5	49.05	0.191 3405	0.317 1451	0.318 6847
31	82 36 52.3	30 0.64	+49.7	+1 1 42.9	+48.34	0.192 0353	0.320 2128	0.321 7294
Apr. 2	83 36 47.9	29 54.96	+50.4	+1 3 18.8	+47.61	0.192 7251	0.323 2345	0.324 7282

MARS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.			Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—		
	°	'	"			°	'	"			At Date.	At Intermediate Date.	
Apr.	2	83	36 47.9	29 54.96	+ 50.4	+ 1	3	18.8	+ 47.61	0.192 7251	0.323 2345	0.324 7282	
	4	84	36 32.2	29 49.35	51.0	1	4	53.3	46.88	0.193 4096	0.326 2104	0.327 6809	
	6	85	36 5.4	29 43.79	51.6	1	6	26.4	46.13	0.194 0887	0.329 1400	0.330 5876	
	8	86	35 27.5	29 38.29	52.1	1	7	57.9	45.40	0.194 7621	0.332 0239	0.333 4488	
	10	87	34 38.7	29 32.87	52.5	1	9	28.0	44.66	0.195 4298	0.334 8625	0.336 2650	
	12	88	33 39.1	29 27.50	+ 52.9	+ 1	10	56.6	+ 43.90	0.196 0915	0.337 6563	0.339 0365	
	14	89	32 28.8	29 22.22	53.2	1	12	23.6	43.14	0.196 7471	0.340 4056	0.341 7636	
	16	90	31 8.0	29 16.99	53.4	1	13	49.1	42.37	0.197 3965	0.343 1106	0.344 4471	
	18	91	29 36.8	29 11.84	53.6	1	15	13.1	41.61	0.198 0395	0.345 7727	0.347 0875	
	20	92	27 55.4	29 6.74	53.7	1	16	35.5	40.83	0.198 6759	0.348 3916	0.349 6850	
	22	93	26 3.8	29 1.70	+ 53.8	+ 1	17	56.4	+ 40.05	0.199 3057	0.350 9676	0.352 2396	
	24	94	24 2.2	28 56.75	53.8	1	19	15.7	39.26	0.199 9287	0.353 5008	0.354 7510	
	26	95	21 50.9	28 51.88	53.7	1	20	33.5	38.47	0.200 5447	0.355 9902	0.357 2186	
	28	96	19 29.8	28 47.05	53.6	1	21	49.6	37.68	0.201 1537	0.358 4360	0.359 6424	
	30	97	16 59.1	28 42.29	53.4	1	23	4.2	36.89	0.201 7555	0.360 8378	0.362 0220	
	May	2	98	14 19.0	28 37.61	+ 53.2	+ 1	24	17.2	+ 36.09	0.202 3500	0.363 1950	0.364 3569
		4	99	11 29.6	28 33.01	52.9	1	25	28.6	35.29	0.202 9371	0.365 5077	0.366 6475
		6	100	8 31.1	28 28.47	52.5	1	26	38.4	34.50	0.203 5167	0.367 7762	0.368 8938
		8	101	5 23.6	28 24.01	52.1	1	27	46.6	33.68	0.204 0886	0.370 0004	0.371 0961
		10	102	2 7.2	28 19.62	51.6	1	28	53.1	32.87	0.204 6527	0.372 1810	0.373 2549
12		102	58 42.1	28 15.30	+ 51.1	+ 1	29	58.1	+ 32.06	0.205 2090	0.374 3181	0.375 3706	
14		103	55 8.5	28 11.06	50.5	1	31	1.4	31.25	0.205 7573	0.376 4125	0.377 4439	
16		104	51 26.4	28 6.88	49.9	1	32	3.1	30.44	0.206 2976	0.378 4647	0.379 4751	
18		105	47 36.1	28 2.80	49.2	1	33	3.2	29.61	0.206 8297	0.380 4751	0.381 4646	
20		106	43 37.7	27 58.77	48.4	1	34	1.6	28.81	0.207 3535	0.382 4436	0.383 4123	
	22	107	39 31.2	27 54.79	+ 47.6	+ 1	34	58.4	+ 28.00	0.207 8690	0.384 3705	0.385 3183	
	24	108	35 16.9	27 50.91	46.8	1	35	53.6	27.18	0.208 3761	0.386 2556	0.387 1822	
	26	109	30 55.0	27 47.12	45.9	1	36	47.1	26.36	0.208 8746	0.388 0981	0.389 0035	
	28	110	26 25.5	27 43.39	45.0	1	37	39.0	25.54	0.209 3645	0.389 8982	0.390 7820	
	30	111	21 48.6	27 39.73	44.0	1	38	29.3	24.73	0.209 8458	0.391 6550	0.392 5172	
	June	1	112	17 4.5	27 36.14	+ 43.0	+ 1	39	17.9	+ 23.90	0.210 3183	0.393 3686	0.394 2093
		3	113	12 13.3	27 32.63	42.0	1	40	4.9	23.08	0.210 7819	0.395 0389	0.395 8579
		5	114	7 15.1	27 29.19	40.9	1	40	50.3	22.27	0.211 2367	0.396 6663	0.397 4639
		7	115	2 10.1	27 25.83	39.7	1	41	34.0	21.45	0.211 6824	0.398 2509	0.399 0273
		9	115	56 58.5	27 22.55	38.6	1	42	16.1	20.63	0.212 1191	0.399 7931	0.400 5483
11		116	51 40.4	27 19.35	+ 37.4	+ 1	42	56.5	+ 19.81	0.212 5467	0.401 2931	0.402 0275	
13		117	46 16.0	27 16.21	36.1	1	43	35.3	18.99	0.212 9652	0.402 7517	0.403 4658	
15		118	40 45.3	27 13.15	34.8	1	44	12.5	18.17	0.213 3744	0.404 1697	0.404 8632	
17		119	35 8.6	27 10.16	33.5	1	44	48.0	17.36	0.213 7743	0.405 5463	0.406 2193	
19		120	29 26.0	27 7.25	32.2	1	45	21.9	16.54	0.214 1648	0.406 8821	0.407 5348	
	21	121	23 37.7	27 4.41	+ 30.8	+ 1	45	54.2	+ 15.72	0.214 5460	0.408 1771	0.408 8090	
	23	122	17 43.8	27 1.64	29.4	1	46	24.8	14.91	0.214 9177	0.409 4304	0.410 0414	
	25	123	11 44.4	26 58.95	28.0	1	46	53.8	14.10	0.215 2798	0.410 6417	0.411 2316	
	27	124	5 39.7	26 56.35	26.5	1	47	21.2	13.28	0.215 6324	0.411 8109	0.412 3795	
	29	124	59 29.9	26 53.83	25.0	1	47	47.0	12.47	0.215 9753	0.412 9374	0.413 4846	
	July	1	125	53 15.1	26 51.36	+ 23.5	+ 1	48	11.1	+ 11.66	0.216 3086	0.414 0211	0.414 5472
		3	126	46 55.4	26 48.98	+ 22.0	+ 1	48	33.7	+ 10.86	0.216 6322	0.415 0627	0.415 5674

MARS.									
GREENWICH MEAN NOON.									
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—		
							At Date.	At Intermediate Date.	
July	1 125 53 15.1	26 51.36	+ 23.5	+ 1 48 11.1	+ 11.66	0.216 3086	0.414 0211	0.414 5472	
	3 126 46 55.4	26 48.98	22.0	1 48 33.7	10.86	0.216 6322	0.415 0627	0.415 5674	
	5 127 40 31.1	26 46.66	20.4	1 48 54.6	10.04	0.216 9461	0.416 0616	0.416 5453	
	7 128 34 2.1	26 44.42	18.9	1 49 13.9	9.24	0.217 2502	0.417 0185	0.417 4812	
	9 129 27 28.7	26 42.26	17.3	1 49 31.5	8.44	0.217 5444	0.417 9335	0.418 3754	
	11 130 20 51.2	26 40.17	+ 15.7	+ 1 49 47.6	+ 7.64	0.217 8288	0.418 8070	0.419 2284	
	13 131 14 9.5	26 38.16	14.1	1 50 2.1	6.83	0.218 1032	0.419 6397	0.420 0405	
	15 132 7 23.9	26 36.23	12.5	1 50 15.0	6.03	0.218 3678	0.420 4312	0.420 8119	
	17 133 0 34.4	26 34.37	10.9	1 50 26.2	5.23	0.218 6223	0.421 1824	0.421 5425	
	19 133 53 41.4	26 32.57	9.2	1 50 35.9	4.44	0.218 8669	0.421 8923	0.422 2319	
	21 134 46 44.8	26 30.85	+ 7.6	+ 1 50 44.0	+ 3.65	0.219 1014	0.422 5612	0.422 8798	
	23 135 39 44.8	26 29.21	6.0	1 50 50.5	2.86	0.219 3259	0.423 1879	0.423 4854	
	25 136 32 41.7	26 27.65	4.3	1 50 55.4	2.06	0.219 5403	0.423 7722	0.424 0484	
	27 137 25 35.4	26 26.15	2.7	1 50 58.7	1.27	0.219 7446	0.424 3140	0.424 5689	
	29 138 18 26.3	26 24.74	+ 1.0	1 51 0.5	+ 0.48	0.219 9387	0.424 8130	0.425 0463	
	31 139 11 14.4	26 23.40	- 0.6	+ 1 51 0.7	- 0.30	0.220 1227	0.425 2689	0.425 4807	
Aug.	2 140 3 59.9	26 22.13	2.3	1 50 59.3	1.08	0.220 2965	0.425 6818	0.425 8722	
	4 140 56 43.0	26 20.94	3.9	1 50 56.3	1.87	0.220 4600	0.426 0521	0.426 2215	
	6 141 49 23.7	26 19.82	5.6	1 50 51.8	2.64	0.220 6134	0.426 3803	0.426 5283	
	8 142 42 2.3	26 18.78	7.2	1 50 45.7	3.42	0.220 7565	0.426 6658	0.426 7929	
	10 143 34 38.9	26 17.81	- 8.8	+ 1 50 38.2	- 4.19	0.220 8894	0.426 9097	0.427 0161	
	12 144 27 13.6	26 16.92	10.4	1 50 29.0	4.97	0.221 0120	0.427 1121	0.427 1977	
	14 145 19 46.6	26 16.10	12.1	1 50 18.3	5.74	0.221 1243	0.427 2729	0.427 3376	
	16 146 12 18.1	26 15.33	13.6	1 50 6.1	6.50	0.221 2263	0.427 3919	0.427 4357	
	18 147 4 48.1	26 14.68	15.2	1 49 52.2	7.27	0.221 3180	0.427 4689	0.427 4913	
	20 147 57 16.8	26 14.08	- 16.8	+ 1 49 36.9	- 8.04	0.221 3994	0.427 5030	0.427 5039	
	22 148 49 44.4	26 13.55	18.3	1 49 20.1	8.80	0.221 4705	0.427 4940	0.427 4731	
	24 149 42 11.1	26 13.11	19.9	1 49 1.7	9.54	0.221 5312	0.427 4413	0.427 3985	
	26 150 34 36.9	26 12.74	21.4	1 48 41.8	10.31	0.221 5815	0.427 3447	0.427 2799	
	28 151 27 2.1	26 12.44	22.9	1 48 20.5	11.07	0.221 6215	0.427 2040	0.427 1171	
Sept.	30 152 19 26.7	26 12.21	- 24.4	+ 1 47 57.5	- 11.82	0.221 6512	0.427 0191	0.426 9101	
	1 153 11 50.9	26 12.05	25.8	1 47 33.2	12.57	0.221 6705	0.426 7901	0.426 6590	
	3 154 4 15.0	26 11.98	27.2	1 47 7.3	13.32	0.221 6794	0.426 5170	0.426 3640	
	5 154 56 38.9	26 11.99	28.6	1 46 39.9	14.06	0.221 6780	0.426 2001	0.426 0255	
	7 155 49 2.9	26 12.05	30.0	1 46 11.0	14.80	0.221 6662	0.425 8400	0.425 6437	
	9 156 41 27.2	26 12.18	- 31.4	+ 1 45 40.7	- 15.54	0.221 6441	0.425 4366	0.425 2187	
	11 157 33 51.7	26 12.41	32.7	1 45 8.9	16.27	0.221 6116	0.424 9901	0.424 7507	
	13 158 26 16.9	26 12.72	34.0	1 44 35.6	17.01	0.221 5687	0.424 5005	0.424 2392	
	15 159 18 42.6	26 13.07	35.2	1 44 0.8	17.75	0.221 5154	0.423 9669	0.423 6838	
	17 160 11 9.2	26 13.51	36.4	1 43 24.6	18.47	0.221 4518	0.423 3894	0.423 0836	
	19 161 3 36.7	26 14.03	- 37.6	+ 1 42 46.9	- 19.20	0.221 3779	0.422 7666	0.422 4385	
	21 161 56 5.4	26 14.63	38.8	1 42 7.8	19.92	0.221 2937	0.422 0989	0.421 7480	
	23 162 48 35.3	26 15.29	39.9	1 41 27.2	20.64	0.221 1991	0.421 3855	0.421 0114	
	25 163 41 6.6	26 16.03	41.0	1 40 45.2	21.36	0.221 0943	0.420 6257	0.420 2286	
Oct.	27 164 33 39.5	26 16.85	42.0	1 40 1.7	22.07	0.220 9791	0.419 8200	0.419 3997	
	29 165 26 14.1	26 17.74	- 43.0	+ 1 39 16.9	- 22.79	0.220 8536	0.418 9679	0.418 5246	
	1 166 18 50.5	26 18.70	- 44.0	+ 1 38 30.6	- 23.50	0.220 7179	0.418 0699	0.417 6037	

MARS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—		
							At Date.	At Inter- mediate Date.	
Oct.	1	166 18 50.5	26 18.70	- 44.0	+ 1 38 30.6	- 23.50	0.220 7179	0.418 0699	0.417 6037
	3	167 11 28.9	26 19.74	44.9	1 37 42.9	24.21	0.220 5719	0.417 1260	0.416 6370
	5	168 4 9.5	26 20.86	45.8	1 36 53.7	24.91	0.220 4157	0.416 1366	0.415 6249
	7	168 56 52.4	26 22.05	46.7	1 36 3.2	25.60	0.220 2492	0.415 1018	0.414 5674
	9	169 49 37.8	26 23.31	47.5	1 35 11.3	26.30	0.220 0725	0.414 0217	0.413 4647
	11	170 42 25.7	26 24.65	- 48.2	+ 1 34 18.0	- 27.00	0.219 8857	0.412 8963	0.412 3166
	13	171 35 16.4	26 26.06	48.9	1 33 23.3	27.68	0.219 6887	0.411 7253	0.411 1224
	15	172 28 10.0	26 27.56	49.6	1 32 27.3	28.37	0.219 4815	0.410 5078	0.409 8815
	17	173 21 6.7	26 29.13	50.2	1 31 29.8	29.05	0.219 2643	0.409 2434	0.408 5937
	19	174 14 6.6	26 30.76	50.8	1 30 31.0	29.73	0.219 0369	0.407 9321	0.407 2585
	21	175 7 9.8	26 32.48	- 51.3	+ 1 29 30.9	- 30.40	0.218 7995	0.406 5728	0.405 8751
	23	176 0 16.5	26 34.26	51.8	1 28 29.4	31.07	0.218 5521	0.405 1654	0.404 4435
	25	176 53 26.9	26 36.12	52.2	1 27 26.6	31.75	0.218 2947	0.403 7094	0.402 9632
	27	177 46 41.1	26 38.06	52.6	1 26 22.4	32.41	0.218 0273	0.402 2048	0.401 4344
	29	178 39 59.2	26 40.08	52.9	1 25 16.9	33.07	0.217 7499	0.400 6520	0.399 8575
	31	179 33 21.5	26 42.18	- 53.2	+ 1 24 10.1	- 33.73	0.217 4627	0.399 0510	0.398 2325
Nov.	2	180 26 48.0	26 44.36	53.4	1 23 2.0	34.38	0.217 1656	0.397 4020	0.396 5595
	4	181 20 18.9	26 46.60	53.6	1 21 52.6	35.03	0.216 8586	0.395 7052	0.394 8392
	6	182 13 54.4	26 48.91	53.7	1 20 41.9	35.67	0.216 5419	0.393 9613	0.393 0714
	8	183 7 34.6	26 51.30	53.8	1 19 29.9	36.31	0.216 2154	0.392 1696	0.391 2560
	10	184 1 19.6	26 53.77	- 53.8	+ 1 18 16.6	- 36.95	0.215 8793	0.390 3305	0.389 3929
	12	184 55 9.7	26 56.31	53.8	1 17 2.1	37.58	0.215 5334	0.388 4432	0.387 4813
	14	185 49 4.9	26 58.92	53.7	1 15 46.3	38.20	0.215 1780	0.386 5072	0.385 5208
	16	186 43 5.4	27 1.62	53.5	1 14 29.2	38.83	0.214 8130	0.384 5219	0.383 5104
	18	187 37 11.4	27 4.39	53.3	1 13 10.9	39.44	0.214 4385	0.382 4865	0.381 4502
	20	188 31 23.0	27 7.24	- 53.1	+ 1 11 51.4	- 40.05	0.214 0545	0.380 4013	0.379 3398
22	189 25 40.4	27 10.16	52.8	1 10 30.7	40.66	0.213 6611	0.378 2656	0.377 1788	
24	190 20 3.7	27 13.16	52.4	1 9 8.8	41.26	0.213 2584	0.376 0794	0.374 9674	
26	191 14 33.1	27 16.23	52.0	1 7 45.7	41.85	0.212 8463	0.373 8428	0.372 7056	
28	192 9 8.7	27 19.38	51.6	1 6 21.4	42.44	0.212 4250	0.371 5558	0.370 3935	
30	193 3 50.7	27 22.61	- 51.0	+ 1 4 55.9	- 43.03	0.211 9946	0.369 2189	0.368 0320	
Dec.	2	193 58 39.2	27 25.91	50.5	1 3 29.3	43.60	0.211 5551	0.366 8329	0.365 6213
	4	194 53 34.4	27 29.29	49.9	1 2 1.5	44.17	0.211 1065	0.364 3975	0.363 1615
	6	195 48 36.4	27 32.74	49.2	1 0 32.6	44.74	0.210 6489	0.361 9132	0.360 6525
	8	196 43 45.4	27 36.26	48.5	0 59 2.5	45.30	0.210 1825	0.359 3796	0.358 0945
	10	197 39 1.5	27 39.87	- 47.7	+ 0 57 31.4	- 45.84	0.209 7072	0.356 7969	0.355 4867
	12	198 34 24.9	27 43.55	46.8	0 55 59.1	46.34	0.209 2232	0.354 1639	0.352 8225
	14	199 29 55.8	27 47.31	46.0	0 54 25.8	46.93	0.208 7305	0.351 4805	0.350 1198
	16	200 25 34.2	27 51.13	45.0	0 52 51.4	47.43	0.208 2293	0.348 7463	0.347 3600
	18	201 21 20.3	27 55.03	44.1	0 51 16.0	47.98	0.207 7195	0.345 9608	0.344 5488
	20	202 17 14.3	27 59.01	- 43.0	+ 0 49 39.5	- 48.50	0.207 2013	0.343 1238	0.341 6859
	22	203 13 16.4	28 3.06	42.0	0 48 2.0	49.01	0.206 6748	0.340 2350	0.338 7712
	24	204 9 26.6	28 7.18	40.8	0 46 23.4	49.51	0.206 1400	0.337 2945	0.335 8049
	26	205 5 45.2	28 11.38	39.7	0 44 43.9	50.00	0.205 5971	0.334 3025	0.332 7874
	28	206 2 12.2	28 15.66	38.5	0 43 3.5	50.48	0.205 0462	0.331 2598	0.329 7197
	30	206 58 47.9	28 20.00	- 37.2	+ 0 41 22.0	- 50.95	0.204 4873	0.328 1670	0.326 6018
	32	207 55 32.3	28 24.42	- 35.9	+ 0 39 39.6	- 51.42	0.203 9205	0.325 0242	0.323 4343

JUPITER.												
GREENWICH MEAN NOON.												
Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.			Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
	°	'	"			°	'	"			At Date.	At Intermediate Date.
Jan.	1	126	19 54.1	4 48.74	+ 21.7	+ 0	35 27.8	+ 5.89	0.723 7248	0.647 0254	0.645 4515	
	5	126	39 8.8	4 48.60	21.9	0	35 51.3	5.87	0.723 8340	0.643 9784	0.642 6100	
	9	126	58 22.9	4 48.46	22.0	0	36 14.8	5.85	0.723 9429	0.641 3494	0.640 2002	
	13	127	17 36.5	4 48.31	22.2	0	36 38.1	5.83	0.724 0515	0.639 1649	0.638 2461	
	17	127	36 49.4	4 48.17	22.3	0	37 1.4	5.81	0.724 1598	0.637 4463	0.636 7674	
	21	127	56 1.8	4 48.03	+ 22.5	+ 0	37 24.6	+ 5.79	0.724 2678	0.636 2113	0.635 7797	
	25	128	15 13.7	4 47.89	22.7	0	37 47.7	5.77	0.724 3754	0.635 4741	0.635 2957	
	29	128	34 25.0	4 47.75	22.8	0	38 10.7	5.75	0.724 4827	0.635 2452	0.635 3228	
Feb.	2	128	53 35.7	4 47.61	23.0	0	38 33.6	5.73	0.724 5897	0.635 5287	0.635 8624	
	6	129	12 45.8	4 47.47	23.1	0	38 56.5	5.71	0.724 6964	0.636 3228	0.636 9082	
	10	129	31 55.4	4 47.33	+ 23.3	+ 0	39 19.2	+ 5.68	0.724 8028	0.637 6168	0.638 4464	
	14	129	51 4.4	4 47.19	23.4	0	39 41.9	5.66	0.724 9088	0.639 3945	0.640 4585	
	18	130	10 12.9	4 47.05	23.6	0	40 4.5	5.64	0.725 0145	0.641 6354	0.642 9222	
	22	130	29 20.8	4 46.91	23.8	0	40 27.0	5.62	0.725 1198	0.644 3155	0.645 8124	
	26	130	48 28.2	4 46.77	23.9	0	40 49.4	5.60	0.725 2248	0.647 4090	0.649 1019	
	Mar.	1	131	7 35.0	4 46.64	+ 24.1	+ 0	41 11.8	+ 5.57	0.725 3295	0.650 8868	0.652 7599
5	131	26 41.3	4 46.50	24.2	0	41 34.0	5.55	0.725 4339	0.654 7164	0.656 7517		
9	131	45 47.1	4 46.36	24.3	0	41 56.2	5.53	0.725 5380	0.658 8610	0.661 0392		
13	132	4 52.3	4 46.23	24.5	0	42 18.3	5.51	0.725 6417	0.663 2821	0.665 5852		
17	132	23 56.9	4 46.10	24.6	0	42 40.3	5.49	0.725 7450	0.667 9438	0.670 3529		
21	132	43 1.0	4 45.96	+ 24.7	+ 0	43 2.2	+ 5.46	0.725 8479	0.672 8088	0.675 3077		
25	133	2 4.6	4 45.82	24.8	0	43 24.0	5.44	0.725 9505	0.677 8455	0.680 4181		
29	133	21 7.6	4 45.69	24.9	0	43 45.7	5.42	0.726 0527	0.683 0214	0.685 6511		
Apr.	2	133	40 10.1	4 45.55	25.0	0	44 7.4	5.40	0.726 1546	0.688 3031	0.690 9735	
	6	133	59 12.1	4 45.42	25.1	0	44 28.9	5.38	0.726 2561	0.693 6582	0.696 3535	
	10	134	18 13.5	4 45.29	+ 25.2	+ 0	44 50.3	+ 5.35	0.726 3573	0.699 0556	0.701 7615	
	14	134	37 14.4	4 45.16	25.3	0	45 11.7	5.33	0.726 4581	0.704 4681	0.707 1719	
	18	134	56 14.7	4 45.03	25.4	0	45 33.0	5.31	0.726 5585	0.709 8707	0.712 5617	
	22	135	15 14.6	4 44.90	25.5	0	45 54.2	5.28	0.726 6585	0.715 2426	0.717 9110	
	26	135	34 13.9	4 44.77	25.6	0	46 15.2	5.26	0.726 7582	0.720 5643	0.723 1998	
	30	135	53 12.7	4 44.64	+ 25.7	+ 0	46 36.2	+ 5.23	0.726 8575	0.725 8153	0.728 4084	
May	4	136	12 11.0	4 44.51	25.8	0	46 57.1	5.21	0.726 9564	0.730 9770	0.733 5186	
	8	136	31 8.8	4 44.38	25.9	0	47 17.9	5.19	0.727 0549	0.736 0316	0.738 5142	
	12	136	50 6.1	4 44.25	26.0	0	47 38.6	5.16	0.727 1530	0.740 9651	0.743 3827	
	16	137	9 2.8	4 44.12	26.1	0	47 59.2	5.14	0.727 2507	0.745 7659	0.748 1135	
	20	137	27 59.1	4 44.00	+ 26.1	+ 0	48 19.7	+ 5.11	0.727 3480	0.750 4242	0.752 6969	
	24	137	46 54.8	4 43.87	26.2	0	48 40.1	5.09	0.727 4450	0.754 9304	0.757 1235	
	28	138	5 50.1	4 43.75	26.2	0	49 0.4	5.07	0.727 5416	0.759 2752	0.761 3842	
	June 1	138	24 44.8	4 43.62	26.3	0	49 20.6	5.04	0.727 6378	0.763 4496	0.765 4703	
5	138	43 39.0	4 43.50	26.3	0	49 40.7	5.02	0.727 7336	0.767 4454	0.769 3740		
9	139	2 32.7	4 43.37	+ 26.4	+ 0	50 0.7	+ 4.99	0.727 8290	0.771 2556	0.773 0897		
13	139	21 26.0	4 43.25	26.4	0	50 20.7	4.97	0.727 9239	0.774 8759	0.776 6136		
17	139	40 18.8	4 43.12	26.5	0	50 40.5	4.94	0.728 0184	0.778 3027	0.779 9429		
21	139	59 11.0	4 43.00	26.5	0	51 0.2	4.92	0.728 1125	0.781 5335	0.783 0738		
25	140	18 2.8	4 42.88	26.6	0	51 19.8	4.89	0.728 2062	0.784 5632	0.786 0011		
29	140	36 54.1	4 42.76	+ 26.6	+ 0	51 39.3	+ 4.86	0.728 2995	0.787 3874	0.788 7210		
July 3	140	55 44.9	4 42.64	+ 26.7	+ 0	51 58.7	+ 4.84	0.728 3924	0.790 0019	0.791 2302		

JUPITER.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.			Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.			Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
											At Date.	At Intermediate Date.
	°	'	"	"	"	°	'	"	"			
July 3	140	55	44.9	4 42.64	+ 26.7	+ 0	51	58.7	+ 4.84	0.728 3924	0.790 0019	0.791 2302
7	141	14	35.2	4 42.52	26.7	0	52	18.0	4.81	0.728 4849	0.792 4045	0.793 5256
11	141	33	25.1	4 42.40	26.7	0	52	37.2	4.79	0.728 5769	0.794 5932	0.795 6073
15	141	52	14.5	4 42.28	26.7	0	52	56.3	4.76	0.728 6685	0.796 5679	0.797 4749
19	142	11	3.4	4 42.17	26.7	0	53	15.3	4.74	0.728 7597	0.798 3279	0.799 1266
23	142	29	51.8	4 42.05	+ 26.8	+ 0	53	34.2	+ 4.71	0.728 8505	0.799 8707	0.800 5597
27	142	48	39.8	4 41.94	26.8	0	53	53.0	4.69	0.728 9408	0.801 1933	0.801 7713
31	143	7	27.3	4 41.82	26.8	0	54	11.7	4.66	0.729 0307	0.802 2936	0.802 7602
Aug. 4	143	26	14.4	4 41.71	26.8	0	54	30.3	4.64	0.729 1202	0.803 1710	0.803 5260
8	143	45	1.0	4 41.59	26.8	0	54	48.8	4.61	0.729 2093	0.803 8252	0.804 0687
12	144	3	47.1	4 41.48	+ 26.9	+ 0	55	7.2	+ 4.59	0.729 2979	0.804 2566	0.804 3886
16	144	22	32.8	4 41.36	26.9	0	55	25.4	4.56	0.729 3861	0.804 4648	0.804 4851
20	144	41	18.0	4 41.25	26.9	0	55	43.6	4.53	0.729 4739	0.804 4494	0.804 3571
24	145	0	2.8	4 41.14	26.9	0	56	1.7	4.50	0.729 5612	0.804 2082	0.804 0025
28	145	18	47.1	4 41.03	26.9	0	56	19.6	4.47	0.729 6480	0.803 7401	0.803 4208
Sept. 1	145	37	31.0	4 40.92	+ 26.9	+ 0	56	37.5	+ 4.45	0.729 7344	0.803 0448	0.802 6121
5	145	56	14.4	4 40.81	26.9	0	56	55.2	4.42	0.729 8203	0.802 1231	0.801 5781
9	146	14	57.4	4 40.70	26.9	0	57	12.8	4.39	0.729 9058	0.800 9771	0.800 3200
13	146	33	40.0	4 40.59	26.8	0	57	30.3	4.37	0.729 9908	0.799 6068	0.798 8378
17	146	52	22.1	4 40.48	26.8	0	57	47.7	4.34	0.730 0753	0.798 0128	0.797 1317
21	147	11	3.8	4 40.37	+ 26.8	+ 0	58	5.0	+ 4.32	0.730 1594	0.796 1946	0.795 2013
25	147	29	45.1	4 40.27	26.8	0	58	22.2	4.29	0.730 2430	0.794 1520	0.793 0470
29	147	48	25.9	4 40.16	26.8	0	58	39.3	4.26	0.730 3262	0.791 8867	0.790 6713
Oct. 3	148	7	6.4	4 40.06	26.7	0	58	56.3	4.23	0.730 4089	0.789 4014	0.788 0776
7	148	25	46.4	4 39.95	26.7	0	59	13.1	4.20	0.730 4911	0.786 7001	0.785 2693
11	148	44	26.0	4 39.84	+ 26.6	+ 0	59	29.9	+ 4.18	0.730 5728	0.783 7856	0.782 2495
15	149	3	5.1	4 39.74	26.6	0	59	46.5	4.15	0.730 6541	0.780 6611	0.779 0204
19	149	21	43.9	4 39.63	26.5	1	0	3.0	4.12	0.730 7349	0.777 3282	0.775 5848
23	149	40	22.2	4 39.53	26.5	1	0	19.4	4.09	0.730 8152	0.773 7910	0.771 9472
27	149	59	0.2	4 39.43	26.4	1	0	35.7	4.06	0.730 8950	0.770 0546	0.768 1140
31	150	17	37.7	4 39.33	+ 26.4	+ 1	0	51.9	+ 4.04	0.730 9744	0.766 1266	0.764 0935
Nov. 4	150	36	14.8	4 39.23	26.3	1	1	8.0	4.01	0.731 0533	0.762 0157	0.759 8943
8	150	54	51.6	4 39.13	26.3	1	1	24.0	3.98	0.731 1317	0.757 7302	0.755 5245
12	151	13	27.9	4 39.03	26.2	1	1	39.8	3.95	0.731 2096	0.753 2784	0.750 9930
16	151	32	3.8	4 38.93	26.1	1	1	55.6	3.92	0.731 2870	0.748 6697	0.746 3094
20	151	50	39.4	4 38.83	+ 26.0	+ 1	2	11.2	+ 3.90	0.731 3639	0.743 9142	0.741 4860
24	152	9	14.5	4 38.74	25.9	1	2	26.7	3.87	0.731 4403	0.739 0267	0.736 5379
28	152	27	49.3	4 38.64	25.8	1	2	42.1	3.84	0.731 5162	0.734 0223	0.731 4821
Dec. 2	152	46	23.7	4 38.55	25.7	1	2	57.4	3.81	0.731 5916	0.728 9196	0.726 3375
6	153	4	57.7	4 38.45	25.6	1	3	12.5	3.78	0.731 6666	0.723 7377	0.721 1227
10	153	23	31.3	4 38.35	+ 25.6	+ 1	3	27.6	+ 3.75	0.731 7411	0.718 4952	0.715 8575
14	153	42	4.6	4 38.26	25.5	1	3	42.5	3.72	0.731 8151	0.713 2126	0.710 5633
18	154	0	37.5	4 38.17	25.4	1	3	57.3	3.69	0.731 8886	0.707 9131	0.705 2649
22	154	19	10.0	4 38.08	25.3	1	4	12.0	3.66	0.731 9616	0.702 6228	0.699 9904
26	154	37	42.1	4 37.99	25.2	1	4	26.6	3.63	0.732 0340	0.697 3717	0.694 7708
30	154	56	13.9	4 37.89	+ 25.1	+ 1	4	41.0	+ 3.60	0.732 1059	0.692 1916	0.689 6377
34	155	14	45.3	4 37.80	+ 25.0	+ 1	4	55.4	+ 3.57	0.732 1773	0.687 1137	

SATURN.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
Jan. 1	357 32 38.8	2 0.28	+ 1 15.4	- 2 15 4.6	- 2.24	0.979 7977	0.991 2081	0.992 5984
5	357 40 40.0	2 0.31	1 15.1	2 15 13.5	2.23	0.979 7416	0.993 9678	0.995 3148
9	357 48 41.3	2 0.34	1 14.8	2 15 22.4	2.22	0.979 6855	0.996 6382	0.997 9368
13	357 56 42.7	2 0.36	1 14.5	2 15 31.3	2.20	0.979 6293	0.999 2095	1.000 4551
17	358 4 44.2	2 0.38	1 14.2	2 15 40.0	2.19	0.979 5731	1.001 6733	1.002 8627
21	358 12 45.8	2 0.41	+ 1 13.9	- 2 15 48.8	- 2.18	0.979 5170	1.004 0227	1.005 1524
25	358 20 47.6	2 0.44	1 13.6	2 15 57.5	2.17	0.979 4609	1.006 2509	1.007 3171
29	358 28 49.5	2 0.47	1 13.3	2 16 6.2	2.16	0.979 4048	1.008 3503	1.009 3497
Feb. 2	358 36 51.5	2 0.51	1 13.0	2 16 14.8	2.15	0.979 3487	1.010 3145	1.011 2438
6	358 44 53.6	2 0.55	1 12.7	2 16 23.4	2.14	0.979 2925	1.012 1371	1.012 9936
10	358 52 55.9	2 0.58	+ 1 12.4	- 2 16 32.0	- 2.13	0.979 2363	1.013 8130	1.014 5948
14	359 0 58.3	2 0.61	1 12.1	2 16 40.5	2.12	0.979 1801	1.015 3386	1.016 0440
18	359 9 0.8	2 0.64	1 11.8	2 16 48.9	2.11	0.979 1239	1.016 7107	1.017 3385
22	359 17 3.5	2 0.67	1 11.5	2 16 57.4	2.10	0.979 0677	1.017 9270	1.018 4756
26	359 25 6.2	2 0.70	1 11.2	2 17 5.7	2.09	0.979 0114	1.018 9841	1.019 4521
Mar. 1	359 33 9.1	2 0.73	+ 1 10.9	- 2 17 14.1	- 2.08	0.978 9551	1.019 8793	1.020 2655
5	359 41 12.1	2 0.76	1 10.6	2 17 22.4	2.07	0.978 8988	1.020 6104	1.020 9138
9	359 49 15.3	2 0.80	1 10.3	2 17 30.6	2.06	0.978 8425	1.021 1756	1.021 3959
13	359 57 18.5	2 0.83	1 10.0	2 17 38.8	2.05	0.978 7862	1.021 5746	1.021 7119
17	0 5 21.9	2 0.86	1 9.6	2 17 47.0	2.04	0.978 7298	1.021 8077	1.021 8622
21	0 13 25.4	2 0.89	+ 1 9.3	- 2 17 55.1	- 2.03	0.978 6735	1.021 8753	1.021 8471
25	0 21 29.0	2 0.92	1 9.0	2 18 3.2	2.02	0.978 6172	1.021 7776	1.021 6667
29	0 29 32.8	2 0.96	1 8.7	2 18 11.2	2.01	0.978 5609	1.021 5144	1.021 3207
Apr. 2	0 37 36.7	2 0.99	1 8.4	2 18 19.2	2.00	0.978 5046	1.021 0858	1.020 8098
6	0 45 40.7	2 1.02	1 8.0	2 18 27.2	1.98	0.978 4482	1.020 4931	1.020 1359
10	0 53 44.8	2 1.05	+ 1 7.7	- 2 18 35.1	- 1.97	0.978 3919	1.019 7387	1.019 3019
14	1 1 49.0	2 1.08	1 7.3	2 18 43.0	1.96	0.978 3356	1.018 8258	1.018 3106
18	1 9 53.4	2 1.11	1 7.0	2 18 50.8	1.95	0.978 2793	1.017 7567	1.017 1645
22	1 17 57.9	2 1.14	1 6.6	2 18 58.6	1.94	0.978 2229	1.016 5342	1.015 8661
26	1 26 2.5	2 1.17	1 6.3	2 19 6.3	1.93	0.978 1665	1.015 1604	1.014 4175
30	1 34 7.3	2 1.20	+ 1 6.0	- 2 19 14.0	- 1.92	0.978 1101	1.013 6380	1.012 8223
May 4	1 42 12.2	2 1.23	1 5.7	2 19 21.6	1.91	0.978 0537	1.011 9711	1.011 0849
8	1 50 17.2	2 1.27	1 5.3	2 19 29.2	1.90	0.977 9973	1.010 1644	1.009 2104
12	1 58 22.3	2 1.30	1 5.0	2 19 36.8	1.89	0.977 9409	1.008 2236	1.007 2046
16	2 6 27.5	2 1.33	1 4.6	2 19 44.3	1.87	0.977 8844	1.006 1540	1.005 0725
20	2 14 32.9	2 1.36	+ 1 4.3	- 2 19 51.8	- 1.86	0.977 8280	1.003 9607	1.002 8193
24	2 22 38.4	2 1.39	1 4.0	2 19 59.2	1.85	0.977 7716	1.001 6489	1.000 4502
28	2 30 44.0	2 1.42	1 3.6	2 20 6.6	1.84	0.977 7153	0.999 2241	0.997 9715
June 1	2 38 49.8	2 1.45	1 3.3	2 20 13.9	1.83	0.977 6589	0.996 6934	0.995 3909
5	2 46 55.7	2 1.48	1 2.9	2 20 21.2	1.81	0.977 6025	0.994 0652	0.992 7173
9	2 55 1.7	2 1.52	+ 1 2.6	- 2 20 28.4	- 1.80	0.977 5461	0.991 3482	0.989 9590
13	3 3 7.8	2 1.55	1 2.2	2 20 35.6	1.79	0.977 4897	0.988 5509	0.987 1251
17	3 11 14.1	2 1.59	1 1.8	2 20 42.8	1.78	0.977 4333	0.985 6825	0.984 2242
21	3 19 20.5	2 1.62	1 1.5	2 20 49.9	1.77	0.977 3769	0.982 7514	0.981 2652
25	3 27 27.0	2 1.65	1 1.1	2 20 56.9	1.76	0.977 3204	0.979 7671	0.978 2586
29	3 35 33.6	2 1.68	+ 1 0.7	- 2 21 3.9	- 1.75	0.977 2640	0.976 7412	0.975 2165
July 3	3 43 40.4	2 1.71	+ 1 0.4	- 2 21 10.9	- 1.74	0.977 2076	0.973 6861	0.972 1515

SATURN.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
July	3	3 43 40.4	2 1.71 + 1 0.4	- 2 21 10.9	- 1.74	0.977 2076	0.973 6861	0.972 1315
	7	3 51 47.4	2 1.74 1 0.0	2 21 17.8	1.73	0.977 1512	0.970 6143	0.969 0764
	11	3 59 54.3	2 1.77 0 59.7	2 21 24.7	1.72	0.977 0948	0.967 5393	0.966 0045
	15	4 8 1.4	2 1.80 0 59.3	2 21 31.5	1.70	0.977 0384	0.964 4737	0.962 9484
	19	4 16 8.7	2 1.83 0 59.0	2 21 38.3	1.69	0.976 9820	0.961 4303	0.959 9211
	23	4 24 16.1	2 1.86 + 0 58.6	- 2 21 45.1	- 1.68	0.976 9256	0.958 4228	0.956 9374
	27	4 32 23.6	2 1.90 0 58.2	2 21 51.8	1.67	0.976 8691	0.955 4668	0.954 0128
	31	4 40 31.2	2 1.93 0 57.8	2 21 58.4	1.66	0.976 8126	0.952 5778	0.951 1640
Aug.	4	4 48 39.0	2 1.96 0 57.4	2 22 5.0	1.65	0.976 7562	0.949 7732	0.948 4072
	8	4 56 46.9	2 1.99 0 57.1	2 22 11.6	1.64	0.976 6998	0.947 0680	0.945 7576
	12	5 4 54.9	2 2.02 + 0 56.7	- 2 22 18.1	- 1.63	0.976 6435	0.944 4776	0.943 2299
	16	5 13 3.0	2 2.06 0 56.3	2 22 24.6	1.62	0.976 5872	0.942 0163	0.940 8387
	20	5 21 11.3	2 2.09 0 55.9	2 22 31.0	1.61	0.976 5308	0.939 6992	0.938 5998
	24	5 29 19.7	2 2.12 0 55.5	2 22 37.4	1.59	0.976 4744	0.937 5423	0.936 5286
	28	5 37 28.3	2 2.15 0 55.2	2 22 43.7	1.58	0.976 4179	0.935 5607	0.934 6404
Sept.	1	5 45 36.9	2 2.18 + 0 54.8	- 2 22 50.0	- 1.57	0.976 3615	0.933 7693	0.932 9490
	5	5 53 45.7	2 2.21 0 54.4	2 22 56.2	1.56	0.976 3051	0.932 1808	0.931 4662
	9	6 1 54.6	2 2.24 0 54.0	2 23 2.4	1.55	0.976 2486	0.930 8062	0.930 2019
	13	6 10 3.6	2 2.27 0 53.6	2 23 8.5	1.53	0.976 1922	0.929 6544	0.929 1649
	17	6 18 12.8	2 2.30 0 53.3	2 23 14.6	1.52	0.976 1358	0.928 7346	0.928 3646
	21	6 26 22.1	2 2.33 + 0 52.9	- 2 23 20.7	- 1.51	0.976 0795	0.928 0556	0.927 8084
	25	6 34 31.5	2 2.37 0 52.5	2 23 26.7	1.50	0.976 0232	0.927 6235	0.927 5015
	29	6 42 41.0	2 2.40 0 52.1	2 23 32.7	1.49	0.975 9668	0.927 4426	0.927 4471
Oct.	3	6 50 50.7	2 2.43 0 51.7	2 23 38.6	1.47	0.975 9104	0.927 5149	0.927 6458
	7	6 59 0.5	2 2.46 0 51.3	2 23 44.5	1.46	0.975 8540	0.927 8393	0.928 0950
	11	7 7 10.4	2 2.49 + 0 50.9	- 2 23 50.3	- 1.45	0.975 7977	0.928 4125	0.928 7913
	15	7 15 20.4	2 2.53 0 50.5	2 23 56.1	1.44	0.975 7414	0.929 2308	0.929 7304
	19	7 23 30.6	2 2.56 0 50.1	2 24 1.8	1.43	0.975 6851	0.930 2893	0.930 9066
	23	7 31 40.9	2 2.59 0 49.7	2 24 7.5	1.41	0.975 6287	0.931 5812	0.932 3119
	27	7 39 51.3	2 2.62 0 49.3	2 24 13.1	1.40	0.975 5724	0.933 0974	0.933 9361
	31	7 48 1.8	2 2.65 + 0 48.9	- 2 24 18.7	- 1.39	0.975 5161	0.934 8263	0.935 7663
Nov.	4	7 56 12.5	2 2.69 0 48.5	2 24 24.2	1.38	0.975 4598	0.936 7543	0.937 7885
	8	8 4 23.3	2 2.72 0 48.1	2 24 29.7	1.37	0.975 4036	0.938 8670	0.939 9881
	12	8 12 34.2	2 2.75 0 47.7	2 24 35.1	1.35	0.975 3473	0.941 1500	0.942 3508
	16	8 20 45.2	2 2.78 0 47.3	2 24 40.5	1.34	0.975 2910	0.943 5886	0.944 8614
	20	8 28 56.4	2 2.81 + 0 46.9	- 2 24 45.9	- 1.33	0.975 2347	0.946 1673	0.947 5042
	24	8 37 7.7	2 2.84 0 46.5	2 24 51.2	1.32	0.975 1785	0.948 8699	0.950 2621
	28	8 45 19.1	2 2.87 0 46.1	2 24 56.4	1.31	0.975 1223	0.951 6785	0.953 1167
Dec.	2	8 53 30.7	2 2.90 0 45.7	2 25 1.6	1.29	0.975 0661	0.954 5747	0.956 0501
	6	9 1 42.3	2 2.93 0 45.3	2 25 6.8	1.28	0.975 0099	0.957 5409	0.959 0450
	10	9 9 54.1	2 2.96 + 0 44.9	- 2 25 11.9	- 1.27	0.974 9537	0.960 5606	0.962 0858
	14	9 18 6.0	2 3.00 0 44.5	2 25 16.9	1.26	0.974 8975	0.963 6185	0.965 1566
	18	9 26 18.1	2 3.03 0 44.1	2 25 21.9	1.25	0.974 8413	0.966 6983	0.968 2418
	22	9 34 30.3	2 3.06 0 43.6	2 25 26.9	1.23	0.974 7851	0.969 7851	0.971 3260
	26	9 42 42.6	2 3.09 0 43.2	2 25 31.8	1.22	0.974 7289	0.972 8626	0.974 3932
	30	9 50 55.0	2 3.12 + 0 42.8	- 2 25 36.7	- 1.21	0.974 6728	0.975 9158	0.977 4287
	34	9 59 7.5	2 3.15 + 0 42.4	- 2 25 41.5	- 1.20	0.974 6167	0.978 9300	

URANUS.								
GREENWICH MEAN NOON.								
Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
Jan. 1	282 47 30.0	40.88	+ 8.0	0 22 37.1	- 0.48	1.290 2861	1.311 6095	1.311 6505
9	282 52 57.0	40.87	8.0	0 22 40.9	0.48	1.290 3166	1.311 5945	1.311 4422
17	282 58 23.9	40.87	8.0	0 22 44.8	0.48	1.290 3471	1.311 1947	1.310 8532
25	283 3 50.9	40.86	8.0	0 22 48.6	0.48	1.290 3776	1.310 4188	1.309 8928
Feb. 2	283 9 17.7	40.86	8.1	0 22 52.4	0.48	1.290 4081	1.309 2772	1.308 5743
10	283 14 44.5	40.85	+ 8.1	0 22 56.2	- 0.48	1.290 4385	1.307 7872	1.306 9195
18	283 20 11.3	40.84	8.1	0 23 0.1	0.48	1.290 4689	1.305 9748	1.304 9568
26	283 25 38.1	40.83	8.1	0 23 3.9	0.48	1.290 4993	1.303 8691	1.302 7159
Mar. 5	283 31 4.8	40.83	8.1	0 23 7.7	0.48	1.290 5297	1.301 5018	1.300 2326
13	283 36 31.4	40.82	8.1	0 23 11.5	0.48	1.290 5601	1.298 9138	1.297 5511
21	283 41 58.0	40.82	+ 8.2	0 23 15.3	- 0.48	1.290 5905	1.296 1503	1.294 7168
29	283 47 24.6	40.81	8.2	0 23 19.1	0.47	1.290 6209	1.293 2567	1.291 7766
Apr. 6	283 52 51.1	40.81	8.2	0 23 22.9	0.47	1.290 6512	1.290 2839	1.288 7853
14	283 58 17.6	40.80	8.2	0 23 26.7	0.47	1.290 6815	1.287 2881	1.285 7993
22	284 3 44.0	40.80	8.2	0 23 30.5	0.47	1.290 7118	1.284 3252	1.282 8726
30	284 9 10.4	40.79	+ 8.2	0 23 34.3	- 0.47	1.290 7421	1.281 4489	1.280 0620
May 8	284 14 36.7	40.79	8.2	0 23 38.0	0.47	1.290 7724	1.278 7188	1.277 4264
16	284 20 3.0	40.78	8.3	0 23 41.8	0.47	1.290 8027	1.276 1915	1.275 0195
24	284 25 29.3	40.78	8.3	0 23 45.6	0.47	1.290 8329	1.273 9165	1.272 8891
June 1	284 30 55.5	40.77	8.3	0 23 49.4	0.47	1.290 8632	1.271 9432	1.271 0844
9	284 36 21.7	40.77	+ 8.3	0 23 53.1	- 0.47	1.290 8934	1.270 3173	1.269 6456
17	284 41 47.8	40.76	8.3	0 23 56.9	0.47	1.290 9236	1.269 0731	1.268 6026
25	284 47 13.9	40.76	8.3	0 24 0.6	0.47	1.290 9538	1.268 2378	1.267 9809
July 3	284 52 40.0	40.75	8.3	0 24 4.4	0.47	1.290 9840	1.267 8336	1.267 7969
11	284 58 6.0	40.75	8.3	0 24 8.1	0.47	1.291 0142	1.267 8707	1.268 0542
19	285 3 32.0	40.74	+ 8.4	0 24 11.9	- 0.47	1.291 0443	1.268 3462	1.268 7460
27	285 8 57.9	40.74	8.4	0 24 15.6	0.47	1.291 0744	1.269 2517	1.269 8606
Aug. 4	285 14 23.8	40.74	8.4	0 24 19.4	0.47	1.291 1045	1.270 5693	1.271 3732
12	285 19 49.7	40.73	8.4	0 24 23.1	0.47	1.291 1346	1.272 2681	1.273 2486
20	285 25 15.5	40.73	8.4	0 24 26.8	0.47	1.291 1646	1.274 3105	1.275 4484
28	285 30 41.3	40.72	+ 8.4	0 24 30.5	- 0.47	1.291 1947	1.276 6564	1.277 9276
Sept. 5	285 36 7.0	40.71	8.4	0 24 34.3	0.46	1.291 2247	1.279 2556	1.280 6329
13	285 41 32.7	40.71	8.4	0 24 38.0	0.46	1.291 2547	1.282 0529	1.283 5090
21	285 46 58.3	40.70	8.5	0 24 41.7	0.46	1.291 2847	1.284 9946	1.286 5022
29	285 52 23.9	40.70	8.5	0 24 45.4	0.46	1.291 3147	1.288 0243	1.289 5538
Oct. 7	285 57 49.5	40.69	+ 8.5	0 24 49.1	- 0.46	1.291 3446	1.291 0827	1.292 6046
15	286 3 15.0	40.69	8.5	0 24 52.8	0.46	1.291 3746	1.294 1131	1.295 6019
23	286 8 40.5	40.68	8.5	0 24 56.5	0.46	1.291 4045	1.297 0643	1.298 4934
31	286 14 6.0	40.68	8.5	0 25 0.2	0.46	1.291 4344	1.299 8830	1.301 2268
Nov. 8	286 19 31.4	40.67	8.5	0 25 3.9	0.46	1.291 4643	1.302 5197	1.303 7569
16	286 24 56.7	40.67	+ 8.5	0 25 7.5	- 0.46	1.291 4942	1.304 9335	1.306 0446
24	286 30 22.0	40.66	8.6	0 25 11.2	0.46	1.291 5241	1.307 0856	1.308 0520
Dec. 2	286 35 47.3	40.66	8.6	0 25 14.9	0.46	1.291 5540	1.308 9398	1.309 7457
10	286 41 12.6	40.65	8.6	0 25 18.6	0.46	1.291 5839	1.310 4676	1.311 1029
18	286 46 37.8	40.65	8.6	0 25 22.2	0.46	1.291 6137	1.311 6486	1.312 1029
26	286 52 2.9	40.64	+ 8.6	0 25 25.9	- 0.46	1.291 6435	1.312 4632	1.312 7244
34	286 57 28.1	40.64	+ 8.6	0 25 29.5	- 0.46	1.291 6733	1.312 8986	

NEPTUNE.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Interme- diate Date.
Jan. 1	103 27 46.5	21.89	- 40.5	0 48 57.6	+ 0.60	1.476 2826	1.461 8156	1.461 7842
9	103 30 41.6	21.89	40.5	0 48 52.8	0.60	1.476 2851	1.461 8280	1.461 9472
17	103 33 36.7	21.89	40.4	0 48 48.0	0.60	1.476 2877	1.462 1400	1.462 4045
25	103 36 31.9	21.89	40.4	0 48 43.2	0.60	1.476 2902	1.462 7397	1.463 1446
Feb. 2	103 39 27.0	21.89	40.3	0 48 38.4	0.60	1.476 2927	1.463 6169	1.464 1534
10	103 42 22.1	21.89	- 40.3	0 48 33.6	+ 0.60	1.476 2952	1.464 7503	1.465 4043
18	103 45 17.3	21.89	40.2	0 48 28.7	0.60	1.476 2977	1.466 1112	1.466 8672
26	103 48 12.4	21.89	40.2	0 48 23.9	0.60	1.476 3002	1.467 6680	1.468 5100
Mar. 5	103 51 7.5	21.89	40.1	0 48 19.1	0.60	1.476 3027	1.469 3880	1.470 2970
13	103 54 2.6	21.89	40.1	0 48 14.3	0.60	1.476 3052	1.471 2322	1.472 1885
21	103 56 57.7	21.89	- 40.0	0 48 9.4	+ 0.60	1.476 3077	1.473 1613	1.474 1460
29	103 59 52.8	21.89	40.0	0 48 4.6	0.60	1.476 3102	1.475 1378	1.476 1320
Apr. 6	104 2 47.9	21.89	39.9	0 47 59.8	0.60	1.476 3127	1.477 1237	1.478 1076
14	104 5 43.0	21.89	39.9	0 47 54.9	0.60	1.476 3152	1.479 0798	1.480 0362
22	104 8 38.1	21.89	39.8	0 47 50.1	0.61	1.476 3177	1.480 9729	1.481 8857
30	104 11 33.2	21.89	- 39.8	0 47 45.3	+ 0.61	1.476 3202	1.482 7708	1.483 6241
May 8	104 14 28.3	21.89	39.7	0 47 40.4	0.61	1.476 3227	1.484 4426	1.485 2225
16	104 17 23.4	21.89	39.7	0 47 35.6	0.61	1.476 3251	1.485 9615	1.486 6567
24	104 20 18.5	21.88	39.6	0 47 30.8	0.61	1.476 3276	1.487 3058	1.487 9059
June 1	104 23 13.6	21.88	39.6	0 47 25.9	0.61	1.476 3301	1.488 4549	1.488 9507
9	104 26 8.6	21.88	- 39.5	0 47 21.1	+ 0.61	1.476 3325	1.489 3915	1.489 7758
17	104 29 3.7	21.88	39.5	0 47 16.2	0.61	1.476 3349	1.490 1027	1.490 3711
25	104 31 58.8	21.88	39.4	0 47 11.4	0.61	1.476 3374	1.490 5799	1.490 7280
July 3	104 34 53.8	21.88	39.4	0 47 6.5	0.61	1.476 3399	1.490 8146	1.490 8398
11	104 37 48.9	21.88	39.3	0 47 1.7	0.61	1.476 3423	1.490 8037	1.490 7066
19	104 40 43.9	21.88	- 39.3	0 46 56.8	+ 0.61	1.476 3447	1.490 5488	1.490 3307
27	104 43 39.0	21.88	39.2	0 46 52.0	0.61	1.476 3472	1.490 0528	1.489 7158
Aug. 4	104 46 34.0	21.88	39.2	0 46 47.1	0.61	1.476 3496	1.489 3210	1.488 8701
12	104 49 29.0	21.88	39.1	0 46 42.2	0.61	1.476 3520	1.488 3650	1.487 8072
20	104 52 24.0	21.88	39.1	0 46 37.4	0.61	1.476 3544	1.487 1986	1.486 5412
28	104 55 19.1	21.88	- 39.0	0 46 32.5	+ 0.61	1.476 3568	1.485 8374	1.485 0901
Sept. 5	104 58 14.1	21.88	38.9	0 46 27.7	0.61	1.476 3592	1.484 3024	1.483 4774
13	105 1 9.1	21.88	38.9	0 46 22.8	0.61	1.476 3616	1.482 6183	1.481 7281
21	105 4 4.2	21.88	38.8	0 46 17.9	0.61	1.476 3640	1.480 8108	1.479 8696
29	105 6 59.2	21.88	38.8	0 46 13.0	0.61	1.476 3664	1.478 9093	1.477 9342
Oct. 7	105 9 54.2	21.88	- 38.7	0 46 8.2	+ 0.61	1.476 3688	1.476 9487	1.475 9573
15	105 12 49.2	21.87	38.7	0 46 3.3	0.61	1.476 3712	1.474 9645	1.473 9747
23	105 15 44.2	21.87	38.6	0 45 58.4	0.61	1.476 3735	1.472 9927	1.472 0237
31	105 18 39.2	21.87	38.6	0 45 53.5	0.61	1.476 3759	1.471 0727	1.470 1448
Nov. 8	105 21 34.1	21.87	38.5	0 45 48.7	0.61	1.476 3783	1.469 2448	1.468 3771
16	105 24 29.1	21.87	- 38.5	0 45 43.8	+ 0.61	1.476 3807	1.467 5463	1.466 7571
24	105 27 24.1	21.87	38.4	0 45 38.9	0.61	1.476 3830	1.466 0140	1.465 3217
Dec. 2	105 30 19.1	21.87	38.4	0 45 34.0	0.61	1.476 3854	1.464 6844	1.464 1055
10	105 33 14.0	21.87	38.3	0 45 29.1	0.61	1.476 3878	1.463 5880	1.463 1350
18	105 36 9.0	21.87	38.3	0 45 24.2	0.61	1.476 3901	1.462 7491	1.462 4330
26	105 39 3.9	21.87	- 38.2	0 45 19.4	+ 0.61	1.476 3924	1.462 1890	1.462 0189
34	105 41 58.9	21.87	- 38.2	0 45 14.5	+ 0.61	1.476 3948	1.461 9228	

FOR GREENWICH MEAN NOON AND MIDNIGHT.									
Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Jan. 1	+0.165 5617	+0.174 1799	+ 771	-0.889 1842	-0.887 7952	+ 173	-0.385 7139	-0.385 1116	- 67
2	0.182 7846	0.191 3752	760	0.886 3368	0.884 8089	184	0.384 4792	0.383 8168	61
3	0.199 9508	0.208 5109	749	0.883 2117	0.881 5454	194	0.383 1244	0.382 4020	55
4	0.217 0546	0.225 5811	738	0.879 8101	0.878 0058	204	0.381 6497	0.380 8674	49
5	0.234 0900	0.242 5804	727	0.876 1327	0.874 1912	213	0.380 0553	0.379 2135	44
6	+0.251 0516	+0.259 5030	+ 716	-0.872 1815	-0.870 1036	+ 222	-0.378 3421	-0.377 4411	- 38
7	0.267 9338	0.276 3432	704	0.867 9577	0.865 7442	231	0.376 5105	0.375 5505	33
8	0.284 7307	0.293 0957	693	0.863 4632	0.861 1150	240	0.374 5612	0.373 5428	27
9	0.301 4374	0.309 7552	681	0.858 6997	0.856 2177	248	0.372 4953	0.371 4187	22
10	0.318 0485	0.326 3167	669	0.853 6691	0.851 0543	256	0.370 3131	0.369 1788	16
11	+0.334 5591	+0.342 7750	+ 657	-0.848 3733	-0.845 6266	+ 264	-0.368 0159	-0.366 8244	- 11
12	0.350 9640	0.359 1254	645	0.842 8144	0.839 9369	271	0.365 6045	0.364 3561	6
13	0.367 2587	0.375 3633	633	0.836 9943	0.833 9870	278	0.363 0795	0.361 7748	- 1
14	0.383 4385	0.391 4836	621	0.830 9151	0.827 7790	285	0.360 4420	0.359 0813	+ 4
15	0.399 4982	0.407 4816	609	0.824 5788	0.821 3150	292	0.357 6928	0.356 2767	9
16	+0.415 4334	+0.423 3529	+ 597	-0.817 9876	-0.814 5970	+ 298	-0.354 8331	-0.353 3621	+ 14
17	0.431 2396	0.439 0928	585	0.811 1433	0.807 6269	304	0.351 8637	0.350 3380	18
18	0.446 9121	0.454 6668	573	0.804 0481	0.800 4072	310	0.348 7851	0.347 2054	23
19	0.462 4463	0.470 1602	561	0.796 7044	0.792 9399	315	0.345 5989	0.343 9657	27
20	0.477 8378	0.485 4786	549	0.789 1140	0.785 2269	320	0.342 3059	0.340 6196	31
21	+0.493 0820	+0.500 6475	+ 537	-0.781 2792	-0.777 2712	+ 324	-0.338 9069	-0.337 1680	+ 35
22	0.508 1743	0.515 6721	525	0.773 2028	0.769 0746	329	0.335 4031	0.333 6122	39
23	0.523 1103	0.530 5183	513	0.764 8866	0.760 6393	333	0.331 7954	0.329 9529	43
24	0.537 8855	0.545 2115	501	0.756 3330	0.751 9680	337	0.328 0848	0.326 1913	47
25	0.552 4956	0.559 7370	490	0.747 5445	0.743 0628	340	0.324 2726	0.322 3286	51
26	+0.566 9354	+0.574 0903	+ 478	-0.738 5234	-0.733 9266	+ 343	-0.320 3596	-0.318 3658	+ 55
27	0.581 2011	0.588 2672	466	0.729 2727	0.724 5619	346	0.316 3473	0.314 3041	58
28	0.595 2878	0.602 2626	454	0.719 7947	0.714 9713	349	0.312 2365	0.310 1445	62
29	0.609 1909	0.616 0722	442	0.710 0922	0.705 1578	351	0.308 0284	0.305 8883	65
30	0.622 9058	0.629 6912	430	0.700 1684	0.695 1243	353	0.303 7243	0.301 5366	68
31	+0.636 4279	+0.643 1153	+ 419	-0.690 0266	-0.684 8741	+ 355	-0.299 3255	-0.297 0910	+ 71
Feb. 1	0.649 7528	0.656 3397	407	0.679 6688	0.674 4104	357	0.294 8334	0.292 5528	74
2	0.662 8756	0.669 3599	396	0.669 0996	0.663 7369	358	0.290 2494	0.287 9234	77
3	0.675 7922	0.682 1718	385	0.658 3226	0.652 8572	359	0.285 5750	0.283 2045	80
4	0.688 4984	0.694 7714	374	0.647 3413	0.641 7752	360	0.280 8120	0.278 3976	83
5	+0.700 9903	+0.707 1546	+ 363	-0.636 1596	-0.630 4949	+ 361	-0.275 9619	-0.273 5048	+ 86
6	0.713 2640	0.719 3179	352	0.624 7816	0.619 0202	362	0.271 0266	0.268 5274	88
7	0.725 3159	0.731 2576	341	0.613 2113	0.607 3552	362	0.266 0074	0.263 4671	91
8	0.737 1426	0.742 9704	330	0.601 4526	0.595 5038	363	0.260 9065	0.258 3259	93
9	0.748 7408	0.754 4533	319	0.589 5095	0.583 4700	363	0.255 7255	0.253 1055	95
10	+0.760 1075	+0.765 7030	+ 309	-0.577 3860	-0.571 2579	+ 363	-0.250 4661	-0.247 8075	+ 97
11	0.771 2394	0.776 7165	299	0.565 0862	0.558 8714	363	0.245 1299	0.242 4337	99
12	0.782 1337	0.787 4906	289	0.552 6139	0.546 3144	363	0.239 7191	0.236 9862	101
13	0.792 7871	0.798 0230	279	0.539 9731	0.533 5905	362	0.234 2351	0.231 4661	103
14	0.803 1977	0.808 3106	269	0.527 1672	0.520 7037	362	0.228 6794	0.225 8754	105
15	+0.813 3616	+0.818 3504	+ 259	-0.514 2008	-0.507 6585	+ 361	-0.223 0541	-0.220 2156	+ 107
16	+0.823 2767	+0.828 1401	+ 249	-0.501 0777	-0.494 4586	+ 360	-0.217 3608	-0.214 4892	+ 109

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X		Reduc. to Mean Eq'x of Jan. o.	Y		Reduc. to Mean Eq'x of Jan. o.	Z		Reduc. to Mean Eq'x of Jan. o.
	True Equinox.	True Equinox.		True Equinox.	True Equinox.		True Equinox.	True Equinox.	
	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.
Feb. 16	+0.823 2767	+0.828 1401	+ 249	-0.501 0777	-0.494 4586	+ 360	-0.217 3608	-0.214 4892	+ 109
17	0.832 9403	0.837 6770	239	0.487 8017	0.481 1076	359	0.211 6013	0.208 6973	111
18	0.842 3498	0.846 9584	230	0.474 3768	0.467 6097	358	0.205 7774	0.202 8417	112
19	0.851 5025	0.855 9818	220	0.460 8069	0.453 9688	357	0.199 8906	0.196 9243	114
20	0.860 3960	0.864 7447	211	0.447 0960	0.440 1889	355	0.193 9429	0.190 9467	115
21	+0.869 0276	+0.873 2444	+ 202	-0.433 2481	-0.426 2741	+ 354	-0.187 9358	-0.184 9106	+ 116
22	0.877 3949	0.881 4787	193	0.419 2673	0.412 2283	352	0.181 8712	0.178 8179	117
23	0.885 4955	0.889 4451	184	0.405 1575	0.398 0556	351	0.175 7509	0.172 6704	118
24	0.893 3270	0.897 1409	175	0.390 9229	0.383 7599	349	0.169 5766	0.166 4693	119
25	0.900 8865	0.904 5636	166	0.376 5674	0.369 3458	347	0.163 3493	0.160 2171	120
26	+0.908 1719	+0.911 7108	+ 158	-0.362 0957	-0.354 8176	+ 345	-0.157 0727	-0.153 9159	+ 121
27	0.915 1803	0.918 5804	150	0.347 5120	0.340 1796	343	0.150 7472	0.147 5668	122
28	0.921 9105	0.925 1701	142	0.332 8209	0.325 4365	340	0.144 3750	0.141 1720	122
29	0.928 3590	0.931 4771	134	0.318 0271	0.310 5931	338	0.137 9582	0.134 7337	123
Mar. 1	0.934 5243	0.937 4996	126	0.303 1352	0.295 6540	335	0.131 4988	0.128 2538	123
2	+0.940 4036	+0.943 2357	+ 118	-0.288 1502	-0.280 6244	+ 333	-0.124 9990	-0.121 7345	+ 123
3	0.945 9959	0.948 6840	111	0.273 0772	0.265 5092	330	0.118 4607	0.115 1779	123
4	0.951 2998	0.953 8429	103	0.257 9211	0.250 3136	327	0.111 8863	0.108 5862	123
5	0.956 3132	0.958 7107	96	0.242 6872	0.235 0425	324	0.105 2779	0.101 9616	123
6	0.961 0352	0.963 2867	89	0.227 3802	0.219 7010	321	0.098 6377	0.095 3065	123
7	+0.965 4650	+0.967 5701	+ 82	-0.212 0055	-0.204 2942	+ 318	-0.091 9681	-0.088 6228	+ 123
8	0.969 6018	0.971 5599	75	0.196 5677	0.188 8268	315	0.085 2708	0.081 9126	123
9	0.973 4443	0.975 2555	68	0.181 0719	0.173 3038	311	0.078 5483	0.075 1782	122
10	0.976 9931	0.978 6568	61	0.165 5229	0.157 7298	308	0.071 8026	0.068 4217	122
11	0.980 2465	0.981 7625	55	0.149 9251	0.142 1095	304	0.065 0357	0.061 6449	121
12	+0.983 2046	+0.984 5729	+ 48	-0.134 2837	-0.126 4480	+ 301	-0.058 2497	-0.054 8504	+ 121
13	0.985 8673	0.987 0876	42	0.118 6030	0.110 7494	297	0.051 4471	0.048 0399	120
14	0.988 2339	0.989 3061	36	0.102 8878	0.095 0186	293	0.044 6292	0.041 2153	120
15	0.990 3042	0.991 2280	30	0.087 1425	0.079 2601	289	0.037 7985	0.034 3789	119
16	0.992 0778	0.992 8539	24	0.071 3719	0.063 4784	285	0.030 9568	0.027 5326	118
17	+0.993 5559	+0.994 1836	+ 19	-0.055 5802	-0.047 6780	+ 281	-0.024 1063	-0.020 6782	+ 117
18	0.994 7369	0.995 2156	13	0.039 7723	0.031 8635	277	0.017 2486	0.013 8178	117
19	0.995 6200	0.995 9507	8	0.023 9522	0.016 0390	273	0.010 3859	0.006 9533	116
20	0.996 2074	0.996 3900	+ 3	-0.008 1246	-0.000 2093	269	-0.003 5201	-0.000 0866	115
21	0.996 4983	0.996 5320	- 2	+0.007 7062	+0.015 6215	264	+0.003 3470	+0.006 7804	114
22	+0.996 4915	+0.996 3775	- 7	+0.023 5359	+0.031 4488	+ 260	+0.010 2134	+0.013 6457	+ 113
23	0.996 1893	0.995 9267	12	0.039 3596	0.047 2679	255	0.017 0771	0.020 5073	112
24	0.995 5895	0.995 1787	17	0.055 1730	0.063 0746	251	0.023 9362	0.027 3635	111
25	0.994 6936	0.994 1343	21	0.070 9718	0.078 8640	246	0.030 7890	0.034 2122	110
26	0.993 5009	0.992 7934	25	0.086 7508	0.094 6316	242	0.037 6331	0.041 0514	109
27	+0.992 0119	+0.991 1562	- 29	+0.102 5058	+0.110 3725	+ 237	+0.044 4668	+0.047 8791	+ 108
28	0.990 2266	0.989 2232	33	0.118 2312	0.126 0816	232	0.051 2880	0.054 6932	107
29	0.988 1461	0.986 9952	37	0.133 9229	0.141 7543	227	0.058 0945	0.061 4915	105
30	0.985 7706	0.984 4723	41	0.149 5754	0.157 3855	222	0.064 8841	0.068 2719	104
31	0.983 1006	0.981 6555	44	0.165 1840	0.172 9701	217	0.071 6548	0.075 0324	103
Apr. 1	+0.980 1374	+0.978 5463	- 47	+0.180 7434	+0.188 5032	+ 212	+0.078 4045	+0.081 7706	+ 102
2	+0.976 8824	+0.975 1458	- 50	+0.196 2489	+0.203 9798	+ 207	+0.085 1307	+0.088 4844	+ 100

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X		Reduc. to Mean Eq'x of Jan. 0.	Y		Reduc. to Mean Eq'x of Jan. 0.	Z		Reduc. to Mean Eq'x of Jan. 0.
	True Equinox.			True Equinox.			True Equinox.		
	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.
Apr. 1	+0.980 1374	+0.978 5463	- 47	+0.180 7434	+0.188 5032	+ 212	+0.078 4045	+0.081 7706	+ 102
2	0.976 8824	0.975 1458	50	0.196 2489	0.203 9798	207	0.085 1307	0.088 4844	100
3	0.973 3368	0.971 4555	53	0.211 6955	0.219 3952	202	0.091 8316	0.095 1719	99
4	0.969 5022	0.967 4769	56	0.227 0784	0.234 7444	196	0.098 5050	0.101 8308	97
5	0.965 3801	0.963 2120	59	0.242 3928	0.250 0229	191	0.105 1489	0.108 4592	96
6	+0.960 9727	+0.958 6626	61	+0.257 6343	+0.265 2264	+ 185	+0.111 7613	+0.115 0550	+ 94
7	0.956 2818	0.953 8306	63	0.272 7986	0.280 3502	180	0.118 3400	0.121 6160	93
8	0.951 3092	0.948 7179	65	0.287 8809	0.295 3901	174	0.124 8830	0.128 1409	91
9	0.946 0568	0.943 3265	67	0.302 8773	0.310 3419	169	0.131 3893	0.134 6277	90
10	0.940 5270	0.937 6585	68	0.317 7835	0.325 2014	163	0.137 8561	0.141 0742	88
11	+0.934 7214	+0.931 7161	- 69	+0.332 5952	+0.339 9644	+ 158	+0.144 2819	+0.147 4788	+ 87
12	0.928 6428	0.925 5016	70	0.347 3085	0.354 6270	152	0.150 6649	0.153 8398	85
13	0.922 2029	0.919 0169	71	0.361 9191	0.369 1847	146	0.157 0033	0.160 1552	83
14	0.915 6740	0.912 2646	72	0.376 4233	0.383 6344	140	0.163 2953	0.166 4234	81
15	0.908 7888	0.905 2467	73	0.390 8175	0.397 9721	135	0.169 5394	0.172 6429	79
16	+0.901 6388	+0.897 9654	- 73	+0.405 0976	+0.412 1936	+ 129	+0.175 7338	+0.178 8120	+ 78
17	0.894 2267	0.890 4230	73	0.419 2597	0.426 2955	123	0.181 8771	0.184 9290	77
18	0.886 5547	0.882 6219	73	0.433 3004	0.440 2740	117	0.187 9674	0.190 9923	75
19	0.878 6250	0.874 5641	73	0.447 2159	0.454 1255	112	0.194 0033	0.197 0003	73
20	0.870 4396	0.866 2518	72	0.461 0024	0.467 8460	106	0.199 9831	0.202 9516	72
21	+0.862 0009	+0.857 6872	- 71	+0.474 6560	+0.481 4318	+ 100	+0.205 9054	+0.208 8443	+ 70
22	0.853 3111	0.848 8728	70	0.488 1729	0.494 8789	94	0.211 7682	0.214 6769	69
23	0.844 3726	0.839 8108	69	0.501 5494	0.508 1839	88	0.217 5701	0.220 4478	67
24	0.835 1878	0.830 5038	68	0.514 7818	0.521 3422	82	0.223 3096	0.226 1552	66
25	0.825 7590	0.820 9540	66	0.527 8650	0.534 3499	76	0.228 9844	0.231 7973	64
26	+0.816 0891	+0.811 1646	- 64	+0.540 7962	+0.547 2034	+ 70	+0.234 5935	+0.237 3728	+ 63
27	0.806 1808	0.801 1381	62	0.553 5710	0.559 8985	64	0.240 1349	0.242 8796	61
28	0.796 0370	0.790 8779	60	0.566 1855	0.572 4313	58	0.245 6068	0.248 3163	60
29	0.785 6611	0.780 3871	58	0.578 6356	0.584 7980	52	0.251 0078	0.253 6811	58
30	0.775 0563	0.769 6691	55	0.590 9178	0.596 9945	47	0.256 3359	0.258 9721	57
May 1	+0.764 2260	+0.758 7274	- 52	+0.603 0278	+0.609 0174	+ 41	+0.261 5896	+0.264 1881	+ 55
2	0.753 1738	0.747 5657	49	0.614 9628	0.620 8632	36	0.266 7674	0.269 3272	54
3	0.741 9035	0.736 1878	46	0.626 7184	0.632 5282	31	0.271 8675	0.274 3881	53
4	0.730 4189	0.724 5973	42	0.638 2921	0.644 0096	26	0.276 8887	0.279 3692	52
5	0.718 7235	0.712 7982	38	0.649 6803	0.655 3038	21	0.281 8294	0.284 2692	51
6	+0.706 8217	+0.700 7944	- 34	+0.660 8799	+0.666 4081	+ 16	+0.286 6884	+0.289 0868	+ 50
7	0.694 7168	0.688 5895	30	0.671 8881	0.677 3195	11	0.291 4642	0.293 8206	49
8	0.682 4129	0.676 1875	26	0.682 7019	0.688 0350	6	0.296 1557	0.298 4694	48
9	0.669 9138	0.663 5924	21	0.693 3186	0.698 5522	+ 1	0.300 7616	0.303 0320	47
10	0.657 2236	0.650 8080	16	0.703 7356	0.708 8681	- 4	0.305 2806	0.307 5072	46
11	+0.644 3461	+0.637 8384	- 11	+0.713 9499	+0.718 9804	- 9	+0.309 7117	+0.311 8939	+ 45
12	0.631 2853	0.624 6873	- 5	0.723 9593	0.728 8865	14	0.314 0537	0.316 1910	44
13	0.618 0450	0.611 3588	+ 1	0.733 7615	0.738 5840	19	0.318 3056	0.320 3975	43
14	0.604 6292	0.597 8560	7	0.743 3537	0.748 0705	23	0.322 4664	0.324 5123	42
15	0.591 0416	0.584 1846	13	0.752 7340	0.757 3439	28	0.326 5350	0.328 5345	41
16	+0.577 2800	+0.570 3465	+ 19	+0.761 9000	+0.766 4020	- 32	+0.330 5107	+0.332 4633	+ 41
17	+0.563 3063	+0.556 3458	+ 25	+0.770 8495	+0.775 2424	- 36	+0.334 3923	+0.336 2975	- 40

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X		Reduc. to Mean Eq'x of Jan. 0.	Y		Reduc. to Mean Eq'x of Jan. 0.	Z		Reduc. to Mean Eq'x of Jan. 0.
	True Equinox.			True Equinox.			True Equinox.		
	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.
May 17	+0.563 3663	+0.556 3458	+ 25	+0.770 8495	+0.775 2424	- 36	+0.334 3923	+0.336 2975	+ 40
18	0.549 2858	0.542 1866	32	0.779 5803	0.783 8629	39	0.338 1788	0.340 0362	40
19	0.535 0486	0.527 8724	38	0.788 0900	0.792 2613	43	0.341 8695	0.343 6786	39
20	0.520 6583	0.513 4069	45	0.796 3764	0.800 4350	46	0.345 4633	0.347 2236	39
21	0.506 1186	0.498 7939	52	0.804 4368	0.808 3817	49	0.348 9592	0.350 6701	38
22	+0.491 4334	+0.484 0375	+ 59	+0.812 2693	+0.816 0991	- 52	+0.352 3562	+0.354 0173	+ 38
23	0.476 6068	0.469 1417	66	0.819 8709	0.823 5845	55	0.355 6533	0.357 2640	37
24	0.461 6428	0.454 1105	73	0.827 2396	0.830 8359	57	0.358 8494	0.360 4093	37
25	0.446 5457	0.438 9485	81	0.834 3731	0.837 8508	59	0.361 9437	0.363 4523	37
26	0.431 3197	0.423 6598	89	0.841 2688	0.844 6269	61	0.364 9351	0.366 3919	37
27	+0.415 9695	+0.408 2492	+ 97	+0.847 9249	+0.851 1624	- 63	+0.367 8226	+0.369 2272	+ 37
28	0.400 4997	0.392 7215	105	0.854 3391	0.857 4548	65	0.370 6054	0.371 9572	37
29	0.384 9151	0.377 0811	113	0.860 5093	0.863 5024	67	0.373 2824	0.374 5811	37
30	0.369 2202	0.361 3330	122	0.866 4339	0.869 3036	68	0.375 8531	0.377 0983	37
31	0.353 4201	0.345 4821	130	0.872 1113	0.874 8566	69	0.378 3166	0.379 5078	37
June 1	+0.337 5197	+0.329 5334	+ 139	+0.877 5396	+0.880 1601	- 70	+0.380 6720	+0.381 8090	+ 38
2	0.321 5238	0.313 4915	147	0.882 7179	0.885 2128	70	0.382 9189	0.384 0015	38
3	0.305 4372	0.297 3615	156	0.887 6447	0.890 0134	70	0.385 0567	0.386 0845	39
4	0.289 2649	0.281 1480	164	0.892 3189	0.894 5609	70	0.387 0849	0.388 0577	39
5	0.273 0115	0.264 8565	173	0.896 7393	0.898 8542	70	0.389 0029	0.389 9205	40
6	+0.256 6822	+0.248 4905	+ 181	+0.900 9053	+0.902 8926	- 69	+0.390 8104	+0.391 6726	+ 40
7	0.240 2816	0.232 0560	190	0.904 8159	0.906 6751	68	0.392 5070	0.393 3136	41
8	0.223 8144	0.215 5574	199	0.908 4702	0.910 2010	67	0.394 0923	0.394 8431	42
9	0.207 2856	0.198 9995	208	0.911 8675	0.913 4697	66	0.395 5659	0.396 2609	43
10	0.190 6997	0.182 3867	217	0.915 0075	0.916 4809	64	0.396 9279	0.397 5668	44
11	+0.174 0612	+0.165 7239	+ 226	+0.917 8898	+0.919 2341	- 62	+0.398 1777	+0.398 7606	+ 45
12	0.157 3752	0.149 0155	235	0.920 5137	0.921 7286	60	0.399 3155	0.399 8423	46
13	0.140 6455	0.132 2658	244	0.922 8787	0.923 9642	58	0.400 3409	0.400 8114	47
14	0.123 8768	0.115 4790	253	0.924 9849	0.925 9407	55	0.401 2537	0.401 6680	48
15	0.107 0732	0.098 6600	262	0.926 8315	0.927 6574	52	0.402 0540	0.402 4120	49
16	+0.090 2397	+0.081 8125	+ 271	+0.928 4182	+0.929 1140	- 49	+0.402 7416	+0.403 0430	+ 50
17	0.073 3793	0.064 9408	281	0.929 7446	0.930 3100	45	0.403 3162	0.403 5611	52
18	0.056 4974	0.048 4097	290	0.930 8100	0.931 2446	41	0.403 7777	0.403 9660	53
19	0.039 5983	0.031 1436	299	0.931 6137	0.931 9174	37	0.404 1259	0.404 2575	55
20	0.022 6863	+0.014 2270	308	0.932 1555	0.932 3278	32	0.404 3607	0.404 4353	57
21	+0.005 7662	-0.002 6953	+ 317	+0.932 4346	+0.932 4756	- 27	+0.404 4815	+0.404 4993	+ 59
22	-0.011 1571	0.019 6186	326	0.932 4509	0.932 3604	22	0.404 4887	0.404 4495	61
23	0.028 0792	0.036 5380	334	0.932 2041	0.931 9818	17	0.404 3817	0.404 2855	63
24	0.044 9946	0.053 4482	343	0.931 6936	0.931 3394	11	0.404 1607	0.404 0073	65
25	0.061 8984	0.070 3445	351	0.930 9194	0.930 4337	- 5	0.403 8253	0.403 6148	67
26	-0.078 7858	-0.087 2217	+ 359	+0.929 8821	+0.929 2646	+ 1	+0.403 3759	+0.403 1085	+ 69
27	0.095 6516	0.104 0747	367	0.928 5813	0.927 8324	7	0.402 8125	0.402 4880	71
28	0.112 4905	0.120 8985	375	0.927 0178	0.926 1375	14	0.402 1350	0.401 7535	73
29	0.129 2979	0.137 6879	383	0.925 1916	0.924 1803	21	0.401 3436	0.400 9053	75
30	0.146 0681	0.154 4380	391	0.923 1036	0.921 9617	28	0.400 4386	0.399 9435	77
July 1	-0.162 7968	-0.171 1438	+ 398	+0.920 7546	+0.919 4825	+ 35	+0.399 4202	+0.398 8686	+ 79
2	-0.179 4785	-0.187 8004	+ 405	+0.918 1455	+0.916 7437	+ 43	+0.398 2889	+0.397 6810	+ 81

FOR GREENWICH MEAN NOON AND MIDNIGHT.										
Date.	X		Reduc. to Mean Eq'x of Jan. o.	Y		Reduc. to Mean Eq'x of Jan. o.	Z		Reduc. to Mean Eq'x of Jan. o.	
	True Equinox.			True Equinox.			True Equinox.			
	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	
July 1	-0.162 7968	-0.171 1438	+ 398	+0.920 7546	+0.919 4825	+ 35	+0.399 4202	+0.398 8686	+ 79	
2	0.179 4785	0.187 8004	405	0.918 1455	0.916 7437	43	0.398 2889	0.397 6810	81	
3	0.196 1087	0.204 4029	412	0.915 2771	0.913 7459	51	0.397 0451	0.396 3811	84	
4	0.212 6824	0.220 9465	419	0.912 1503	0.910 4905	59	0.395 6891	0.394 9692	86	
5	0.229 1947	0.237 4264	425	0.908 7665	0.906 9786	68	0.394 2214	0.393 4458	89	
6	-0.245 6409	-0.253 8378	+ 432	+0.905 1268	+0.903 2114	+ 77	+0.392 6425	+0.391 8115	+ 91	
7	0.262 0164	0.270 1763	438	0.901 2326	0.899 1905	86	0.390 9530	0.390 0671	94	
8	0.278 3168	0.286 4374	444	0.897 0853	0.894 9171	95	0.389 1537	0.388 2129	97	
9	0.294 5374	0.302 6164	450	0.892 6861	0.890 3927	105	0.387 2449	0.386 2498	100	
10	0.310 6738	0.318 7090	456	0.888 0369	0.885 6188	114	0.385 2276	0.384 1784	103	
11	-0.326 7219	-0.334 7116	+ 461	+0.883 1387	+0.880 5970	+ 124	+0.383 1022	+0.381 9993	+ 106	
12	0.342 6777	0.350 6197	466	0.877 9937	0.875 3289	134	0.380 8696	0.379 7133	109	
13	0.358 5370	0.366 4291	471	0.872 6029	0.869 8157	145	0.378 5305	0.377 3211	112	
14	0.374 2956	0.382 1361	476	0.866 9677	0.864 0590	155	0.376 0853	0.374 8233	115	
15	0.389 9499	0.397 7364	480	0.861 0898	0.858 0601	166	0.373 5351	0.372 2205	119	
16	-0.405 4953	-0.413 2261	+ 484	+0.854 9702	+0.851 8204	+ 177	+0.370 8798	+0.369 5133	+ 122	
17	0.420 9282	0.428 6011	488	0.848 6107	0.845 3410	188	0.368 1209	0.366 7024	125	
18	0.436 2442	0.443 8569	491	0.842 0118	0.838 6233	199	0.365 2582	0.363 7883	128	
19	0.451 4388	0.458 9893	494	0.835 1757	0.831 6691	210	0.362 2928	0.360 7717	132	
20	0.466 5079	0.473 9939	497	0.828 1037	0.824 4797	221	0.359 2252	0.357 6533	135	
21	-0.481 4469	-0.488 8663	+ 500	+0.820 7973	+0.817 0567	+ 233	+0.356 0561	+0.354 4337	+ 139	
22	0.496 2514	0.503 6016	502	0.813 2581	0.809 4019	244	0.352 7862	0.351 1137	143	
23	0.510 9165	0.518 1955	504	0.805 4883	0.801 5175	256	0.349 4164	0.347 6942	147	
24	0.525 4381	0.532 6437	505	0.797 4898	0.793 4054	267	0.345 9474	0.344 1760	150	
25	0.539 8117	0.546 9415	506	0.789 2646	0.785 0678	279	0.342 3802	0.340 5600	154	
26	-0.554 0326	-0.561 0846	+ 507	+0.780 8151	+0.776 5069	+ 291	+0.338 7155	+0.336 8470	+ 158	
27	0.568 0969	0.575 0687	508	0.772 1436	0.767 7254	303	0.334 9546	0.333 0383	162	
28	0.581 9997	0.588 8894	508	0.763 2526	0.758 7256	315	0.331 0984	0.329 1350	166	
29	0.595 7373	0.602 5427	508	0.754 1448	0.749 5105	327	0.327 1482	0.325 1381	170	
30	0.609 3052	0.616 0243	508	0.744 8230	0.740 0826	339	0.323 1049	0.321 0488	174	
31	-0.622 6995	-0.629 3302	+ 507	+0.735 2898	+0.730 4448	+ 352	+0.318 9699	+0.316 8684	+ 178	
Aug. 1	0.635 9161	0.642 4566	506	0.725 5480	0.720 5998	365	0.314 7443	0.312 5979	182	
2	0.648 9513	0.655 3996	504	0.715 6007	0.710 5510	377	0.310 4293	0.308 2387	186	
3	0.661 8011	0.668 1553	502	0.705 4511	0.700 3012	389	0.306 0263	0.303 7922	190	
4	0.674 4618	0.680 7202	500	0.695 1019	0.689 8536	401	0.301 5367	0.299 2598	194	
5	-0.686 9301	-0.693 0908	+ 497	+0.684 5565	+0.679 2112	+ 413	+0.296 9618	+0.294 6428	+ 198	
6	0.699 2021	0.705 2636	494	0.673 8180	0.668 3774	425	0.292 3030	0.289 9426	202	
7	0.711 2748	0.717 2354	491	0.662 8898	0.657 3553	437	0.287 5618	0.285 1607	206	
8	0.723 1451	0.729 0033	487	0.651 7745	0.646 1480	449	0.282 7395	0.280 2984	211	
9	0.734 8098	0.740 5641	483	0.640 4761	0.634 7590	461	0.277 8376	0.275 3572	215	
10	-0.746 2659	-0.751 9149	+ 479	+0.628 9972	+0.623 1912	+ 473	+0.272 8574	+0.270 3384	+ 219	
11	0.757 5107	0.763 0529	474	0.617 3411	0.611 4474	485	0.267 8003	0.265 2434	223	
12	0.768 5411	0.773 9751	469	0.605 5105	0.599 5308	497	0.262 6677	0.260 0735	227	
13	0.779 3544	0.784 6786	464	0.593 5086	0.587 4442	509	0.257 4610	0.254 8302	231	
14	0.789 9473	0.795 1602	458	0.581 3380	0.575 1906	521	0.252 1813	0.249 5145	235	
15	-0.800 3169	-0.805 4170	+ 452	+0.569 0021	+0.562 7730	+ 533	+0.246 8300	+0.244 1279	+ 239	
16	-0.810 4601	-0.815 4459	+ 446	+0.556 5036	+0.550 1944	+ 544	+0.241 4084	+0.238 6716	+ 243	

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. o.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. o.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. o.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Aug. 16	-0.810 4601	-0.815 4459	+ 446	+0.556 5036	+0.550 1944	+ 544	+0.241 4084	+0.238 6716	+ 243
17	0.820 3740	0.825 2439	439	0.543 8458	0.537 4582	556	0.235 9177	0.233 1470	247
18	0.830 0551	0.834 8073	432	0.531 0319	0.524 5673	567	0.230 3595	0.227 5555	251
19	0.839 5001	0.844 1332	425	0.518 0650	0.511 5254	579	0.224 7350	0.221 8981	255
20	0.848 7061	0.853 2185	418	0.504 9489	0.498 3358	590	0.219 0453	0.216 1772	258
21	-0.857 6699	-0.862 0600	+ 410	+0.491 6868	+0.485 0023	+ 601	+0.213 2935	+0.210 3942	+ 262
22	0.866 3883	0.870 6545	402	0.478 2828	0.471 5286	612	0.207 4796	0.204 5499	266
23	0.874 8582	0.878 9992	393	0.464 7404	0.457 9186	623	0.201 6055	0.198 6467	270
24	0.883 0770	0.887 0913	384	0.451 0638	0.444 1764	634	0.195 6735	0.192 6859	274
25	0.891 0419	0.894 9284	375	0.437 2567	0.430 3056	645	0.189 6845	0.186 6694	278
26	-0.898 7504	-0.902 5076	+ 366	+0.423 3234	+0.416 3107	+ 655	+0.183 6408	+0.180 5988	+ 282
27	0.906 1996	0.909 8262	356	0.409 2680	0.402 1957	665	0.177 5438	0.174 4761	286
28	0.913 3872	0.916 8821	346	0.395 0945	0.387 9649	675	0.171 3958	0.168 3030	290
29	0.920 3108	0.923 6730	336	0.380 8073	0.373 6225	685	0.165 1981	0.162 0813	294
30	0.926 9684	0.930 1967	325	0.366 4109	0.359 1731	694	0.158 9528	0.155 8129	298
31	-0.933 3577	-0.936 4513	+ 314	+0.351 9095	+0.344 6207	+ 703	+0.152 6619	+0.149 4999	+ 302
Sept. 1	0.939 4771	0.942 4347	303	0.337 3073	0.329 9698	712	0.146 3272	0.143 1439	305
2	0.945 3240	0.948 1450	292	0.322 6089	0.315 2251	721	0.139 9504	0.136 7470	309
3	0.950 8974	0.953 5812	280	0.307 8189	0.300 3908	729	0.133 5339	0.130 3113	313
4	0.956 1960	0.958 7416	268	0.292 9414	0.285 4712	738	0.127 0794	0.123 8384	317
5	-0.961 2180	-0.963 6249	+ 256	+0.277 9808	+0.270 4707	+ 746	+0.120 5886	+0.117 3304	+ 320
6	0.965 9622	0.968 2297	244	0.262 9415	0.255 3936	754	0.114 0639	0.110 7893	324
7	0.970 4274	0.972 5552	231	0.247 8276	0.240 2441	761	0.107 5069	0.104 2168	327
8	0.974 6128	0.976 6001	218	0.232 6435	0.225 0263	769	0.100 9194	0.097 6148	330
9	0.978 5171	0.980 3637	205	0.217 3930	0.209 7442	776	0.094 3033	0.090 9850	333
10	-0.982 1396	-0.983 8445	+ 192	+0.202 0803	+0.194 4018	+ 783	+0.087 6603	+0.084 3293	+ 337
11	0.985 4784	0.987 0414	178	0.186 7091	0.179 0029	790	0.080 9922	0.077 6492	340
12	0.988 5332	0.989 9535	164	0.171 2836	0.163 5518	797	0.074 3006	0.070 9466	343
13	0.991 3023	0.992 5795	150	0.155 8079	0.148 0524	803	0.067 5874	0.064 2232	346
14	0.993 7848	0.994 9178	136	0.140 2859	0.132 5089	809	0.060 8543	0.057 4809	349
15	-0.995 9786	-0.996 9672	+ 122	+0.124 7219	+0.116 9255	+ 815	+0.054 1032	+0.050 7214	+ 352
16	0.997 8836	0.998 7274	108	0.109 1203	0.101 3067	821	0.047 3357	0.043 9465	355
17	0.999 4982	1.000 1960	93	0.093 4854	0.085 6568	826	0.040 5539	0.037 1582	358
18	1.000 8208	1.001 3727	78	0.077 8217	0.069 9807	831	0.033 7597	0.030 3585	361
19	1.001 8515	1.002 2570	62	0.062 1342	0.054 2827	836	0.026 9550	0.023 5493	363
20	-1.002 5889	-1.002 8472	+ 47	+0.046 4270	+0.038 5677	+ 841	+0.020 1417	+0.016 7325	+ 366
21	1.003 0319	1.003 1428	31	0.030 7053	0.022 8404	846	0.013 3220	0.009 9104	368
22	1.003 1801	1.003 1438	+ 15	+0.014 9735	+0.007 1054	850	+0.006 4980	+0.003 0850	371
23	1.003 0337	1.002 8495	- 1	-0.000 7634	-0.008 6323	854	-0.000 3283	-0.003 7417	373
24	1.002 5914	1.002 2595	17	0.016 5007	0.024 3677	858	0.007 1550	0.010 5678	375
25	-1.001 8536	-1.001 3737	- 33	-0.032 2332	-0.040 0962	+ 862	-0.013 9798	-0.017 3908	+ 377
26	1.000 8199	1.000 1921	49	0.047 9563	0.055 8127	865	0.020 8006	0.024 2088	379
27	0.999 4904	0.998 7150	66	0.063 6649	0.071 5122	868	0.027 6153	0.031 0197	381
28	0.997 8658	0.996 9426	82	0.079 3541	0.087 1900	871	0.034 4218	0.037 8212	383
29	0.995 9456	0.994 8751	99	0.095 0192	0.102 8410	874	0.041 2178	0.044 6113	384
30	-0.993 7310	-0.992 5134	- 116	-0.110 6548	-0.118 4603	+ 876	-0.048 0013	-0.051 3876	+ 386
Oct. 1	-0.991 2225	-0.989 8583	- 133	-0.126 2567	-0.134 0435	+ 878	-0.054 7699	-0.058 1482	+ 387

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. o.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. o.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. o.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Oct. 1	-0.991 2225	-0.989 8583	-133	-0.126 2567	-0.134 0435	+ 878	-0.054 7699	-0.058 1482	+ 387
2	0.988 4210	0.986 9106	150	0.141 8196	0.149 5851	879	0.061 5220	0.064 8910	388
3	0.985 3274	0.983 6714	167	0.157 3391	0.165 0811	880	0.068 2550	0.071 6139	389
4	0.981 9427	0.980 1415	184	0.172 8104	0.180 5266	881	0.074 9673	0.078 3149	390
5	0.978 2680	0.976 3223	202	0.188 2292	0.195 9176	882	0.081 6565	0.084 9920	391
6	-0.974 3047	-0.972 2154	-219	-0.203 5912	-0.211 2495	+ 882	-0.088 3211	-0.091 6435	+ 392
7	0.970 0543	0.967 8215	237	0.218 8919	0.226 5178	882	0.094 9590	0.098 2672	392
8	0.965 5172	0.963 1416	255	0.234 1269	0.241 7187	882	0.101 5681	0.104 8614	393
9	0.960 6950	0.958 1776	273	0.249 2926	0.256 8479	882	0.108 1469	0.111 4243	393
10	0.955 5894	0.952 9304	291	0.264 3843	0.271 9013	881	0.114 6935	0.117 9542	393
11	-0.950 2007	-0.947 4006	-309	-0.279 3982	-0.286 8746	+ 880	-0.121 2062	-0.124 4493	+ 393
12	0.944 5303	0.941 5899	327	0.294 3208	0.301 7635	879	0.127 6833	0.130 9077	393
13	0.938 5796	0.935 4994	345	0.309 1750	0.316 5639	878	0.134 1225	0.137 3275	393
14	0.932 3493	0.929 1297	363	0.323 9296	0.331 2714	876	0.140 5224	0.143 7070	393
15	0.925 8408	0.922 4827	382	0.338 5888	0.345 8813	874	0.146 8810	0.150 0441	392
16	-0.919 0557	-0.915 5598	-400	-0.353 1482	-0.360 3891	+ 872	-0.153 1962	-0.156 3370	+ 392
17	0.911 9952	0.908 3622	419	0.367 6034	0.374 7905	870	0.159 4663	0.162 5838	391
18	0.904 6610	0.900 8918	437	0.381 9498	0.389 0806	867	0.165 6892	0.168 7824	391
19	0.897 0548	0.893 1502	456	0.396 1825	0.403 2550	864	0.171 8630	0.174 9308	390
20	0.889 1783	0.885 1393	474	0.410 2974	0.417 3092	861	0.177 9857	0.181 0274	389
21	-0.881 0336	-0.876 8615	-493	-0.424 2898	-0.431 2384	+ 857	-0.184 0555	-0.187 0698	+ 388
22	0.872 6232	0.868 3187	512	0.438 1547	0.445 0382	853	0.190 0701	0.193 0561	387
23	0.863 9486	0.859 5132	531	0.451 8882	0.458 7041	849	0.196 0277	0.198 9845	385
24	0.855 0128	0.850 4477	549	0.465 4854	0.472 2316	845	0.201 9264	0.204 8531	383
25	0.845 8181	0.841 1244	568	0.478 9420	0.485 6161	840	0.207 7643	0.210 6597	381
26	-0.836 3670	-0.831 5461	-586	-0.492 2533	-0.498 8529	+ 835	-0.213 5392	-0.216 4023	+ 379
27	0.826 6623	0.821 7162	605	0.505 4147	0.511 9383	829	0.219 2492	0.222 0795	377
28	0.816 7079	0.811 6376	623	0.518 4229	0.524 8677	823	0.224 8929	0.227 6891	375
29	0.806 5059	0.801 3133	642	0.531 2725	0.537 6368	817	0.230 4679	0.233 2291	372
30	0.796 0602	0.790 7469	660	0.543 9602	0.550 2420	811	0.235 9725	0.238 6979	370
31	-0.785 3739	-0.779 9416	-679	-0.556 4818	-0.562 6790	+ 804	-0.241 4050	-0.244 0937	+ 367
Nov. 1	0.774 4504	0.768 9008	698	0.568 8332	0.574 9442	797	0.246 7637	0.249 4149	364
2	0.763 2932	0.757 6281	718	0.581 0113	0.587 0341	790	0.252 0470	0.254 6599	361
3	0.751 9060	0.746 1272	737	0.593 0121	0.598 9449	783	0.257 2533	0.259 8270	358
4	0.740 2922	0.734 4015	757	0.604 8322	0.610 6736	776	0.262 3809	0.264 9149	354
5	-0.728 4554	-0.722 4543	-776	-0.616 4685	-0.622 2165	+ 768	-0.267 4287	-0.269 9221	+ 350
6	0.716 3987	0.710 2889	796	0.627 9173	0.633 5707	760	0.272 3950	0.274 8473	346
7	0.704 1254	0.697 9085	815	0.639 1762	0.644 7331	751	0.277 2788	0.279 6892	342
8	0.691 6395	0.685 3178	835	0.650 2411	0.655 6999	742	0.282 0783	0.284 4460	338
9	0.678 9441	0.672 5189	854	0.661 1091	0.666 4683	733	0.286 7922	0.289 1166	334
10	-0.666 0426	-0.659 5155	-873	-0.671 7771	-0.677 0350	+ 723	-0.291 4192	-0.293 6997	+ 329
11	0.652 9381	0.646 3109	892	0.682 2415	0.687 3963	713	0.295 9579	0.298 1937	325
12	0.639 6343	0.632 9088	910	0.692 4990	0.697 5492	702	0.300 4070	0.302 5975	320
13	0.626 1347	0.619 3126	929	0.702 5465	0.707 4993	691	0.304 7650	0.306 9093	315
14	0.612 4431	0.605 5265	947	0.712 3802	0.717 2160	680	0.309 0303	0.311 1278	310
15	-0.598 5633	-0.591 5541	-966	-0.721 9972	-0.726 7233	+ 668	-0.313 2016	-0.315 2516	+ 305
16	-0.584 4993	-0.577 3994	-984	-0.731 3940	-0.736 0089	+ 656	-0.317 2775	-0.319 2793	+ 300

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X		Reduc. to Mean Eq'x of Jan. 0.	Y		Reduc. to Mean Eq'x of Jan. 0.	Z		Reduc. to Mean Eq'x of Jan. 0.
	True Equinox.	True Equinox.		True Equinox.	True Equinox.		True Equinox.	True Equinox.	
	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.
Nov. 16	-0.584 4993	-0.577 3994	- 984	-0.731 3940	-0.736 0089	+ 656	-0.317 2775	-0.319 2793	+ 300
17	0.570 2549	0.563 0663	1003	0.740 5675	0.745 0695	644	0.321 2568	0.323 2097	294
18	0.555 8342	0.548 5592	1021	0.749 5144	0.753 9018	632	0.325 1378	0.327 0410	288
19	0.541 2417	0.533 8822	1039	0.758 2314	0.762 5027	619	0.328 9192	0.330 7721	282
20	0.526 4813	0.519 0399	1057	0.766 7154	0.770 8694	606	0.332 5998	0.334 4019	276
21	-0.511 5582	-0.504 0367	- 1075	-0.774 9640	-0.778 9987	+ 593	-0.336 1782	-0.337 9286	+ 270
22	0.496 4761	0.488 8771	1093	0.782 9732	0.786 8874	579	0.339 6530	0.341 3513	263
23	0.481 2403	0.473 5663	1111	0.790 7408	0.794 5332	565	0.343 0233	0.344 6687	257
24	0.465 8556	0.458 1089	1128	0.798 2641	0.801 9331	550	0.346 2874	0.347 8794	250
25	0.450 3268	0.442 5101	1146	0.805 5400	0.809 0845	535	0.349 4444	0.350 9823	243
26	-0.434 6593	-0.426 7751	- 1163	-0.812 5663	-0.815 9852	+ 520	-0.352 4931	-0.353 9766	+ 236
27	0.418 8581	0.410 9092	1180	0.819 3410	0.822 6332	504	0.355 4327	0.356 8610	229
28	0.402 9287	0.394 9171	1197	0.825 8615	0.829 0257	488	0.358 2617	0.359 6346	222
29	0.386 8752	0.378 8040	1214	0.832 1256	0.835 1611	471	0.360 9797	0.362 2967	215
30	0.370 7040	0.362 5758	1231	0.838 1320	0.841 0381	454	0.363 5856	0.364 8464	207
Dec. 1	-0.354 4200	-0.346 2372	- 1247	-0.843 8791	-0.846 6548	+ 437	-0.366 0789	-0.367 2831	+ 200
2	0.338 0281	0.329 7933	1263	0.849 3651	0.852 0098	419	0.368 4588	0.369 6060	192
3	0.321 5335	0.313 2493	1279	0.854 5887	0.857 1018	401	0.370 7246	0.371 8146	184
4	0.304 9412	0.296 6094	1295	0.859 5487	0.861 9292	383	0.372 8759	0.373 9084	176
5	0.288 2559	0.279 8799	1310	0.864 2433	0.866 4908	364	0.374 9120	0.375 8868	168
6	-0.271 4827	-0.263 0646	- 1325	-0.868 6716	-0.870 7855	+ 345	-0.376 8325	-0.377 7491	+ 159
7	0.254 6263	0.246 1685	1339	0.872 8323	0.874 8118	326	0.378 6366	0.379 4950	151
8	0.237 6917	0.229 1966	1353	0.876 7239	0.878 5687	306	0.380 3241	0.381 1240	142
9	0.220 6837	0.212 1536	1366	0.880 3458	0.882 0548	286	0.381 8945	0.382 6355	133
10	0.203 6070	0.195 0445	1380	0.883 6958	0.885 2687	265	0.383 3471	0.384 0292	124
11	-0.186 4668	-0.177 8743	- 1394	-0.886 7732	-0.888 2092	+ 244	-0.384 6816	-0.385 3043	+ 115
12	0.169 2678	0.160 6480	1407	0.889 5767	0.890 8754	222	0.385 8972	0.386 4604	106
13	0.152 0155	0.143 3708	1420	0.892 1053	0.893 2660	200	0.386 9937	0.387 4971	97
14	0.134 7147	0.126 0477	1432	0.894 3576	0.895 3798	178	0.387 9705	0.388 4138	87
15	0.117 3706	0.108 6840	1444	0.896 3326	0.897 2159	156	0.388 8271	0.389 2102	78
16	-0.099 9887	-0.091 2852	- 1455	-0.898 0295	-0.898 7733	+ 133	-0.389 5632	-0.389 8859	+ 68
17	0.082 5743	0.073 8565	1466	0.899 4473	0.900 0514	110	0.390 1784	0.390 4406	59
18	0.065 1326	0.056 4034	1477	0.900 5854	0.901 0494	86	0.390 6724	0.390 8738	49
19	0.047 6693	0.038 9312	1487	0.901 4431	0.901 7665	62	0.391 0449	0.391 1856	39
20	0.030 1899	0.021 4461	1496	0.902 0196	0.902 2023	38	0.391 2957	0.391 3752	29
21	-0.012 7003	-0.003 9532	- 1505	-0.902 3145	-0.902 3561	+ 14	-0.391 4242	-0.391 4426	+ 19
22	+0.004 7944	+0.013 5417	1514	0.902 3272	0.902 2278	- 11	0.391 4304	0.391 3877	+ 8
23	0.022 2879	0.031 0323	1522	0.902 0579	0.901 8173	36	0.391 3144	0.391 2105	- 2
24	0.039 7742	0.048 5129	1530	0.901 5062	0.901 1247	61	0.391 0759	0.390 9107	13
25	0.057 2477	0.065 9778	1538	0.900 6728	0.900 1504	86	0.390 7150	0.390 4887	24
26	+0.074 7025	+0.083 4210	- 1545	-0.899 5576	-0.898 8946	- 114	-0.390 2319	-0.389 9445	- 35
27	0.092 1327	0.100 8368	1552	0.898 1614	0.897 3581	140	0.389 6266	0.389 2783	46
28	0.109 5327	0.118 2196	1558	0.896 4849	0.895 5418	167	0.388 8997	0.388 4907	57
29	0.126 8969	0.135 5639	1563	0.894 5290	0.893 4465	194	0.388 0514	0.387 5818	68
30	0.144 2199	0.152 8643	1568	0.892 2946	0.891 0733	221	0.387 0820	0.386 5521	79
31	+0.161 4964	+0.170 1155	- 1572	-0.889 7828	-0.888 4233	- 247	-0.385 9922	-0.385 4023	- 90
32	+0.178 7209	+0.187 3121	- 1576	-0.886 9948	-0.885 4975	- 274	-0.384 7825	-0.384 1328	- 101

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.		Day of Month.	FEBRUARY.		Day of Month.	MARCH.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	246 19 26.1	+ 3 15 52.6	1.0	299 1 44.9	- 1 21 0.3	1.0	322 24 38.7	- 3 15 30.5
1.5	253 37 35.3	2 42 25.3	1.5	306 38 46.7	2 0 37.1	1.5	329 56 37.7	3 44 34.6
2.0	261 1 5.5	2 5 50.5	2.0	314 16 24.9	2 38 5.5	2.0	337 28 9.8	4 9 40.4
2.5	268 29 6.8	1 26 44.1	2.5	321 53 21.2	3 12 39.1	2.5	344 58 1.3	4 30 20.0
3.0	276 0 40.4	0 45 48.4	3.0	329 28 17.7	3 43 37.4	3.0	352 24 59.9	4 46 13.6
3.5	283 34 41.0	+ 0 3 50.7	3.5	337 0 0.2	- 4 10 27.1	3.5	359 47 57.7	- 4 57 9.9
4.0	291 9 58.1	- 0 38 18.2	4.0	344 27 21.1	4 32 43.5	4.0	7 5 54.5	5 3 6.0
4.5	298 45 18.9	1 19 46.7	4.5	351 49 22.0	4 50 10.5	4.5	14 17 59.5	5 4 6.6
5.0	306 19 31.8	1 59 44.3	5.0	359 5 15.5	5 2 40.5	5.0	21 23 33.7	5 0 23.3
5.5	313 51 28.2	2 37 24.0	5.5	6 14 26.4	5 10 13.6	5.5	28 22 10.2	4 52 12.8
6.0	321 20 5.5	- 3 12 4.2	6.0	13 16 31.6	- 5 12 56.7	6.0	35 13 34.2	- 4 39 56.0
6.5	328 44 29.1	3 43 10.1	6.5	20 11 20.2	5 11 1.9	6.5	41 57 42.5	4 23 56.3
7.0	336 3 53.4	4 10 14.2	7.0	26 58 52.1	5 4 45.0	7.0	48 34 42.6	4 4 38.5
7.5	343 17 43.1	4 32 56.6	7.5	33 39 17.0	4 54 25.0	7.5	55 4 51.1	3 42 28.0
8.0	350 25 33.1	4 51 5.0	8.0	40 12 52.5	4 40 22.4	8.0	61 28 32.2	3 17 49.8
8.5	357 27 8.3	- 5 4 33.8	8.5	46 40 2.7	- 4 22 58.4	8.5	67 46 16.6	- 2 51 8.1
9.0	4 22 22.6	5 13 23.1	9.0	53 1 16.9	4 2 34.7	9.0	73 58 38.7	2 22 46.2
9.5	11 11 18.3	5 17 37.8	9.5	59 17 7.8	3 39 32.8	9.5	80 6 17.0	1 53 5.9
10.0	17 54 4.5	5 17 26.9	10.0	65 28 10.4	3 14 13.8	10.0	86 9 51.6	1 22 28.0
10.5	24 30 55.8	5 13 2.1	10.5	71 35 1.0	2 46 58.2	10.5	92 10 3.6	0 51 12.2
11.0	31 2 11.3	- 5 4 37.6	11.0	77 38 16.0	- 2 18 6.0	11.0	98 7 34.4	- 0 19 37.4
11.5	37 28 13.2	4 52 29.0	11.5	83 38 31.4	1 47 56.8	11.5	104 3 4.6	+ 0 11 58.4
12.0	43 49 25.9	4 36 53.1	12.0	89 36 22.1	1 16 49.8	12.0	109 57 13.6	0 43 17.8
12.5	50 6 15.2	4 18 7.6	12.5	95 32 21.6	0 45 3.7	12.5	115 50 39.1	1 14 3.6
13.0	56 19 7.2	3 56 30.7	13.0	101 27 1.1	- 0 12 57.3	13.0	121 43 56.3	1 43 59.0
13.5	62 28 27.7	- 3 32 21.3	13.5	107 20 49.8	+ 0 19 10.8	13.5	127 37 37.9	+ 2 12 47.1
14.0	68 34 42.2	3 5 58.3	14.0	113 14 14.5	0 51 2.2	14.0	133 32 13.6	2 40 11.3
14.5	74 38 15.1	2 37 41.1	14.5	119 7 39.3	1 22 18.3	14.5	139 28 9.9	3 5 55.0
15.0	80 39 29.4	2 7 49.2	15.0	125 1 26.1	1 52 40.8	15.0	145 25 49.9	3 29 41.7
15.5	86 38 46.9	1 36 42.6	15.5	130 55 54.2	2 21 51.5	15.5	151 25 33.4	3 51 15.1
16.0	92 36 27.9	- 1 4 41.2	16.0	136 51 20.7	+ 2 49 32.3	16.0	157 27 36.6	+ 4 10 19.5
16.5	98 32 51.4	- 0 32 5.0	16.5	142 48 0.7	3 15 25.7	16.5	163 32 12.2	4 26 39.7
17.0	104 28 15.3	+ 0 0 45.9	17.0	148 46 7.3	3 39 14.5	17.0	169 39 29.5	4 40 1.7
17.5	110 22 56.5	0 33 31.4	17.5	154 45 52.1	4 0 42.6	17.5	175 49 35.1	4 50 12.6
18.0	116 17 11.1	1 5 51.8	18.0	160 47 25.6	4 19 34.6	18.0	182 2 32.9	4 57 1.0
18.5	122 11 14.6	+ 1 37 27.6	18.5	166 50 57.4	+ 4 35 36.2	18.5	188 18 24.6	+ 5 0 17.7
19.0	128 5 22.3	2 7 59.9	19.0	172 56 36.7	4 48 34.2	19.0	194 37 9.9	4 59 55.4
19.5	133 59 49.4	2 37 10.3	19.5	179 4 32.9	4 58 17.3	19.5	200 58 47.9	4 55 49.6
20.0	139 54 51.7	3 4 40.9	20.0	185 14 55.4	5 4 35.6	20.0	207 23 17.1	4 47 58.3
20.5	145 50 45.3	3 30 14.8	20.5	191 27 54.7	5 7 20.8	20.5	213 50 36.0	4 36 22.4
21.0	151 47 47.2	+ 3 53 35.8	21.0	197 43 42.3	+ 5 6 26.6	21.0	220 20 44.0	+ 4 21 6.0
21.5	157 46 15.6	4 14 28.8	21.5	204 2 31.0	5 1 48.9	21.5	226 53 41.6	4 2 16.3
22.0	163 46 29.9	4 32 39.5	22.0	210 24 34.8	4 53 25.3	22.0	233 29 30.9	3 40 3.4
22.5	169 48 50.9	4 47 54.5	22.5	216 50 9.1	4 41 15.9	22.5	240 8 15.5	3 14 40.5
23.0	175 53 40.9	5 0 1.5	23.0	223 19 30.6	4 25 23.1	23.0	246 50 0.8	2 46 24.3
23.5	182 1 23.3	+ 5 8 49.2	23.5	229 52 56.6	+ 4 5 52.0	23.5	253 34 53.3	+ 2 15 34.2
24.0	188 12 23.1	5 14 7.2	24.0	236 30 44.7	3 42 50.4	24.0	260 23 0.5	1 42 32.7
24.5	194 27 6.1	5 15 46.3	24.5	243 13 12.0	3 16 29.4	24.5	267 14 30.1	1 7 44.9
25.0	200 45 58.7	5 13 38.6	25.0	250 0 34.1	2 47 3.6	25.0	274 9 29.1	+ 0 31 39.4
25.5	207 9 27.4	5 7 37.7	25.5	256 53 4.2	2 14 51.3	25.5	281 8 2.6	- 0 5 13.1
26.0	213 37 58.2	+ 4 57 39.0	26.0	263 50 52.0	+ 1 40 14.9	26.0	288 10 12.8	- 0 42 19.3
26.5	220 11 55.6	4 43 39.9	26.5	270 54 1.8	1 3 41.3	26.5	295 15 57.5	1 19 4.2
27.0	226 51 41.6	4 25 40.7	27.0	278 2 31.3	+ 0 25 41.8	27.0	302 25 9.1	1 54 50.9
27.5	233 37 35.2	4 3 44.9	27.5	285 16 10.4	- 0 13 8.0	27.5	309 37 33.3	2 29 2.0
28.0	240 29 50.4	3 37 59.9	28.0	292 34 39.9	0 52 8.5	28.0	316 52 48.5	3 1 0.2
28.5	247 28 35.1	+ 3 8 37.8	28.5	299 57 30.4	- 1 30 37.5	28.5	324 10 24.8	- 3 30 9.6
29.0	254 33 49.8	2 35 56.2	29.0	307 24 2.0	2 7 50.4	29.0	331 29 44.2	3 55 56.5
29.5	261 45 26.0	2 0 18.7	29.5	314 53 24.5	2 43 2.5	29.5	338 50 1.7	4 17 51.4
30.0	269 3 5.3	1 22 15.0	30.0	322 24 38.7	3 15 30.5	30.0	346 10 25.9	4 35 29.6
30.5	276 26 18.6	0 42 21.3	30.5	329 56 37.7	3 44 34.6	30.5	353 30 1.0	4 48 32.6
31.0	283 54 25.5	+ 0 1 19.2	31.0	337 28 9.8	- 4 9 40.4	31.0	0 47 49.0	- 4 56 48.4
31.5	291 26 34.7	- 0 40 4.6	31.5	344 58 1.3	- 4 30 20.0	31.5	8 2 52.4	- 5 0 12.9

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.		Day of Month.	MAY.		Day of Month.	JUNE.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	15 14 16.6	-4 58 48.8	1.0	51 20 18.4	-3 36 51.7	1.0	97 52 57.8	+0 14 47.9
1.5	22 21 12.1	4 52 45.3	1.5	57 57 31.4	3 10 34.9	1.5	103 58 30.0	0 48 10.0
2.0	29 22 56.8	4 42 17.6	2.0	64 29 37.2	2 42 4.5	2.0	110 1 12.3	1 20 45.2
2.5	36 18 57.5	4 27 45.9	2.5	70 56 35.5	2 11 48.4	2.5	116 1 27.1	1 52 14.3
3.0	43 8 50.8	4 9 33.8	3.0	77 18 32.3	1 40 13.7	3.0	121 59 39.8	2 22 19.6
3.5	49 52 23.1	-3 48 7.1	3.5	83 35 40.1	-1 7 46.4	3.5	127 56 18.1	+2 50 44.9
4.0	56 29 30.6	3 23 52.9	4.0	89 48 17.1	0 34 51.1	4.0	133 51 52.1	3 17 15.1
4.5	63 0 19.1	2 57 18.7	4.5	95 56 46.3	-0 1 50.9	4.5	139 46 53.9	3 41 36.4
5.0	69 25 2.7	2 28 51.4	5.0	102 1 34.9	+0 30 52.8	5.0	145 41 57.2	4 3 35.9
5.5	75 44 2.5	1 58 56.6	5.5	108 3 13.9	1 3 0.3	5.5	151 37 36.5	4 23 1.3
6.0	81 57 45.8	-1 27 58.8	6.0	114 2 17.2	+1 34 13.4	6.0	157 34 27.4	+4 39 41.2
6.5	88 6 45.0	0 56 21.0	6.5	119 59 21.1	2 4 15.4	6.5	163 33 6.0	4 53 24.4
7.0	94 11 36.1	-0 24 24.3	7.0	125 55 3.3	2 32 50.4	7.0	169 34 8.0	5 4 0.2
7.5	100 12 57.7	+0 7 31.6	7.5	131 50 2.5	2 59 43.7	7.5	175 38 8.3	5 11 18.5
8.0	106 11 30.4	0 39 8.2	8.0	137 44 58.1	3 24 41.1	8.0	181 45 40.7	5 15 9.5
8.5	112 7 55.5	+1 10 8.0	8.5	143 40 29.1	+3 47 29.0	8.5	187 57 16.8	+5 15 24.3
9.0	118 2 54.8	1 40 14.5	9.0	149 37 13.8	4 7 54.1	9.0	194 13 25.7	5 11 55.2
9.5	123 57 9.4	2 9 12.0	9.5	155 35 49.3	4 25 43.2	9.5	200 34 33.3	5 4 35.7
10.0	129 51 19.3	2 36 45.0	10.0	161 36 51.1	4 40 43.6	10.0	207 1 0.8	4 53 21.3
10.5	135 46 2.8	3 2 38.2	10.5	167 40 51.9	4 52 42.6	10.5	213 33 4.5	4 38 10.0
11.0	141 41 56.1	+3 26 36.7	11.0	173 48 21.6	+5 1 28.3	11.0	220 10 55.0	+4 19 3.0
11.5	147 39 32.9	3 48 25.7	11.5	179 59 46.3	5 6 49.0	11.5	226 54 36.5	3 56 5.5
12.0	153 39 23.2	4 7 59.4	12.0	186 15 27.8	5 8 34.3	12.0	233 44 6.1	3 29 27.3
12.5	159 41 54.1	4 24 36.3	12.5	192 35 43.6	5 6 35.2	12.5	240 39 13.6	2 59 23.4
13.0	165 47 48.4	4 38 29.3	13.0	199 0 45.7	5 0 44.5	13.0	247 39 41.2	2 26 14.1
13.5	171 56 24.6	+4 49 15.8	13.5	205 30 40.3	+4 50 57.7	13.5	254 45 3.9	+1 50 25.8
14.0	178 8 56.9	4 56 43.4	14.0	212 5 28.0	4 37 13.2	14.0	261 54 50.0	1 12 30.3
14.5	184 25 14.8	5 0 41.0	14.5	218 45 3.7	4 19 33.4	14.5	269 8 21.8	+0 33 4.2
15.0	190 45 23.2	5 0 59.3	15.0	225 29 16.8	3 58 4.8	15.0	276 24 56.7	-0 7 11.7
15.5	197 9 22.9	4 57 31.3	15.5	232 17 51.2	3 32 58.6	15.5	283 43 48.6	0 47 33.8
16.0	203 37 10.2	+4 50 12.8	16.0	239 10 26.3	+3 4 31.0	16.0	291 4 9.1	-1 27 17.2
16.5	210 8 38.0	4 39 2.7	16.5	246 6 37.9	2 33 3.3	16.5	298 25 9.7	2 5 37.5
17.0	216 43 36.3	4 24 3.6	17.0	253 5 59.1	1 59 1.3	17.0	305 46 2.7	2 41 52.4
17.5	223 21 52.7	4 5 21.9	17.5	260 8 0.9	1 22 55.4	17.5	313 6 2.8	3 15 22.7
18.0	230 3 13.5	3 43 7.9	18.0	267 12 13.8	0 45 19.5	18.0	320 24 28.1	3 45 33.9
18.5	236 47 24.5	+3 17 36.1	18.5	274 18 8.6	+0 6 50.1	18.5	327 40 41.5	-4 11 56.9
19.0	243 34 11.7	2 49 4.9	19.0	281 25 17.1	-0 31 54.2	19.0	334 54 11.0	4 34 9.0
19.5	250 23 22.0	2 17 56.2	19.5	288 33 12.6	1 10 14.5	19.5	342 4 29.8	4 51 53.3
20.0	257 14 43.7	1 44 35.4	20.0	295 41 30.8	1 47 32.2	20.0	349 11 16.8	5 4 58.9
20.5	264 8 6.8	1 9 30.6	20.5	302 49 49.6	2 23 9.8	20.5	356 14 16.2	5 13 20.9
21.0	271 3 23.4	+0 33 12.5	21.0	309 57 49.4	-2 56 32.2	21.0	3 13 17.0	-5 16 59.3
21.5	278 0 27.1	-0 3 46.4	21.5	317 5 12.7	3 27 7.6	21.5	10 8 12.5	5 15 59.0
22.0	284 59 12.6	0 40 52.3	22.0	324 11 43.7	3 54 27.3	22.0	16 58 59.5	5 10 29.1
22.5	291 59 35.7	1 17 30.9	22.5	331 17 8.0	4 18 6.7	22.5	23 45 38.3	5 0 41.9
23.0	299 1 32.2	1 53 7.3	23.0	338 21 12.2	4 37 45.6	23.0	30 28 11.6	4 46 53.0
23.5	306 4 56.8	-2 27 7.4	23.5	345 23 43.4	-4 53 8.4	23.5	37 6 43.9	-4 29 20.3
24.0	313 9 42.2	2 58 58.0	24.0	352 24 28.7	5 4 3.9	24.0	43 41 21.3	4 8 23.9
24.5	320 15 38.6	3 28 7.6	24.5	359 23 15.1	5 10 25.8	24.5	50 12 10.8	3 44 25.5
25.0	327 22 32.9	3 54 7.0	25.0	6 19 49.2	5 12 12.3	25.0	56 39 20.1	3 17 48.0
25.5	334 30 8.0	4 16 30.0	25.5	13 13 57.4	5 9 26.3	25.5	63 2 57.6	2 48 55.5
26.0	341 38 2.3	-4 34 54.0	26.0	20 5 25.8	-5 2 14.9	26.0	69 23 12.0	-2 18 12.4
26.5	348 45 49.8	4 49 0.8	26.5	26 54 0.6	4 50 49.3	26.5	75 40 12.2	1 46 3.5
27.0	355 53 0.8	4 58 37.4	27.0	33 39 28.3	4 35 24.6	27.0	81 54 7.7	1 12 53.7
27.5	2 59 2.1	5 3 36.0	27.5	40 21 36.2	4 16 19.2	27.5	88 5 8.3	0 39 7.5
28.0	10 3 18.3	5 3 54.2	28.0	47 0 13.0	3 53 54.3	28.0	94 13 24.7	-0 5 8.8
28.5	17 5 13.2	-4 59 35.7	28.5	53 35 9.2	-3 28 33.2	28.5	100 1 8.1	+0 28 39.4
29.0	24 4 11.1	4 50 49.5	29.0	60 6 17.6	3 0 41.2	29.0	106 22 31.0	1 1 55.0
29.5	30 59 38.4	4 37 49.7	29.5	66 33 33.7	2 30 44.5	29.5	112 23 47.0	1 34 16.9
30.0	37 51 4.9	4 20 54.8	30.0	72 56 55.9	1 59 9.8	30.0	118 23 11.0	2 5 25.8
30.5	44 38 5.0	4 0 27.2	30.5	79 16 26.2	1 26 23.6	30.5	124 20 59.5	2 35 3.6
31.0	51 20 18.4	-3 36 51.7	31.0	85 32 10.1	-0 52 52.1	31.0	130 17 30.3	+3 2 53.4
31.5	57 57 31.4	-3 10 34.9	31.5	91 44 16.5	-0 19 0.3	31.5	136 13 3.7	+3 28 40.0

FOR GREENWICH MEAN NOON AND MIDNIGHT.

JULY.			AUGUST.			SEPTEMBER.		
Day of Month.	True Longitude.	Latitude.	Day of Month.	True Longitude.	Latitude.	Day of Month.	True Longitude.	Latitude.
1.0	130 17 30.3	+ 3 2 53.4	1.0	174 32 31.8	+ 5 6 19.8	1.0	220 24 54.9	+ 3 59 50.6
1.5	136 13 3.7	3 28 40.0	1.5	180 31 48.6	5 10 18.2	1.5	226 43 6.8	3 37 56.9
2.0	142 8 1.1	3 52 9.2	2.0	186 33 2.3	5 10 52.8	2.0	233 5 15.2	3 13 6.8
2.5	148 2 46.3	4 13 8.3	2.5	192 36 38.2	5 7 59.7	2.5	239 31 46.3	2 45 32.1
3.0	153 57 44.5	4 31 25.8	3.0	198 43 3.3	5 1 36.2	3.0	246 3 6.5	2 15 27.2
3.5	159 53 22.9	+ 4 46 51.0	3.5	204 52 46.1	+ 4 51 41.1	3.5	252 39 41.5	+ 1 43 9.4
4.0	165 50 10.4	4 59 14.3	4.0	211 6 16.1	4 38 14.5	4.0	259 21 55.3	1 8 59.1
4.5	171 48 37.2	5 8 27.0	4.5	217 24 3.5	4 21 18.2	4.5	266 10 9.1	+ 0 33 20.2
5.0	177 49 14.7	5 14 20.9	5.0	223 46 38.2	4 0 55.9	5.0	273 4 38.9	- 0 3 19.8
5.5	183 52 35.2	5 16 48.6	5.5	230 14 29.6	3 37 13.7	5.5	280 5 34.7	0 40 29.5
6.0	189 59 11.4	+ 5 15 43.6	6.0	236 48 5.2	+ 3 10 20.5	6.0	287 12 58.5	- 1 17 33.7
6.5	196 9 36.2	5 11 0.6	6.5	243 27 49.6	2 40 28.5	6.5	294 26 42.4	1 53 54.1
7.0	202 24 21.7	5 2 35.1	7.0	250 14 3.3	2 7 53.8	7.0	301 46 26.9	2 28 50.0
7.5	208 43 58.3	4 50 24.2	7.5	257 7 1.3	1 32 56.8	7.5	309 11 40.3	3 1 38.9
8.0	215 8 54.7	4 34 26.8	8.0	264 6 51.2	0 56 2.9	8.0	316 41 38.2	3 31 38.7
8.5	221 39 36.4	+ 4 14 44.6	8.5	271 13 31.9	+ 0 17 42.6	8.5	324 15 23.5	- 3 58 9.1
9.0	228 16 24.7	3 51 22.1	9.0	278 26 52.2	- 0 21 28.6	9.0	331 51 47.8	4 20 33.7
9.5	234 59 35.7	3 24 27.4	9.5	285 46 29.6	1 0 50.3	9.5	339 29 34.1	4 38 22.4
10.0	241 49 19.0	2 54 13.2	10.0	293 11 49.4	1 39 38.6	10.0	347 7 19.8	4 51 12.3
10.5	248 45 37.0	2 20 57.2	10.5	300 42 4.5	2 17 6.7	10.5	354 43 40.4	4 58 49.3
11.0	255 48 23.8	+ 1 45 2.6	11.0	308 16 16.4	- 2 52 27.3	11.0	2 17 13.3	- 5 1 8.6
11.5	262 57 23.6	1 6 58.6	11.5	315 53 16.5	3 24 54.5	11.5	9 46 42.0	4 58 15.0
12.0	270 12 11.0	+ 0 27 20.0	12.0	323 31 48.2	3 53 46.1	12.0	17 10 59.4	4 50 20.9
12.5	277 32 10.8	- 0 13 13.1	12.5	331 10 30.4	4 18 25.3	12.5	24 29 10.0	4 37 46.6
13.0	284 56 38.5	0 53 56.3	13.0	338 48 0.7	4 38 23.1	13.0	31 40 31.7	4 20 57.3
13.5	292 24 40.9	- 1 34 2.4	13.5	346 22 58.9	- 4 53 19.2	13.5	38 44 36.4	- 4 0 22.0
14.0	299 55 17.5	2 12 43.3	14.0	353 54 10.9	5 3 2.4	14.0	45 41 9.5	3 36 32.1
14.5	307 27 22.7	2 49 11.6	14.5	1 20 31.6	5 7 30.6	14.5	52 30 9.0	3 9 59.5
15.0	314 59 48.7	3 22 43.1	15.0	8 41 7.5	5 6 50.3	15.0	59 11 44.1	2 41 15.8
15.5	322 31 26.9	3 52 38.7	15.5	15 55 17.5	5 1 14.7	15.5	65 46 13.0	2 10 51.2
16.0	330 1 11.7	- 4 18 25.6	16.0	23 2 33.3	- 4 51 2.8	16.0	72 14 1.7	- 1 39 14.4
16.5	337 28 2.4	4 39 38.7	16.5	30 2 39.6	4 36 37.7	16.5	78 35 41.6	1 6 52.0
17.0	344 51 5.2	4 56 0.9	17.0	36 55 32.7	4 18 25.2	17.0	84 51 48.0	0 34 8.3
17.5	352 9 35.0	5 7 23.0	17.5	43 41 19.2	3 56 52.7	17.5	91 2 59.4	- 0 1 25.9
18.0	359 22 56.2	5 13 43.3	18.0	50 20 14.5	3 32 28.1	18.0	97 9 55.4	+ 0 30 54.7
18.5	6 30 43.1	- 5 15 6.8	18.5	56 52 40.8	- 3 5 38.6	18.5	103 13 15.5	+ 1 2 34.4
19.0	13 32 39.2	5 11 43.9	19.0	63 19 5.4	2 36 50.8	19.0	109 13 38.8	1 33 15.5
19.5	20 28 37.3	5 3 49.4	19.5	69 39 59.2	2 6 30.4	19.5	115 11 43.2	2 2 41.6
20.0	27 18 38.2	4 51 41.6	20.0	75 55 55.4	1 35 2.0	20.0	121 8 4.7	2 30 37.2
20.5	34 2 49.1	4 35 41.3	20.5	82 7 28.3	1 2 48.7	20.5	127 3 17.0	2 56 47.7
21.0	40 41 23.0	- 4 16 11.0	21.0	88 15 12.2	- 0 30 12.6	21.0	132 57 51.1	+ 3 20 59.1
21.5	47 14 37.0	3 53 33.9	21.5	94 19 40.7	+ 0 2 25.4	21.5	138 52 15.0	3 42 58.0
22.0	53 42 51.3	3 28 13.9	22.0	100 21 26.0	0 34 45.3	22.0	144 46 53.8	4 2 32.0
22.5	60 6 28.0	3 0 35.2	22.5	106 20 58.5	1 6 28.0	22.5	150 42 9.3	4 19 29.4
23.0	66 25 50.5	2 31 1.8	23.0	112 18 46.4	1 37 15.2	23.0	156 38 20.3	4 33 39.1
23.5	72 41 22.5	- 1 59 57.5	23.5	118 15 15.9	+ 2 6 49.4	23.5	162 35 42.8	+ 4 44 51.3
24.0	78 53 27.3	1 27 45.6	24.0	124 10 50.0	2 34 53.8	24.0	168 34 30.2	4 52 57.4
24.5	85 2 27.5	0 54 49.2	24.5	130 5 49.6	3 1 12.4	24.5	174 34 53.0	4 57 50.0
25.0	91 8 44.7	- 0 21 30.8	25.0	136 0 33.6	3 25 30.1	25.0	180 37 0.0	4 59 23.3
25.5	97 12 39.2	+ 0 11 47.9	25.5	141 55 18.5	3 47 32.6	25.5	186 40 58.5	4 57 33.4
26.0	103 14 30.0	+ 0 44 45.7	26.0	147 50 18.6	+ 4 7 6.7	26.0	192 46 54.6	+ 4 52 18.4
26.5	109 14 34.8	1 17 2.1	26.5	153 45 47.2	4 24 0.5	26.5	198 54 53.9	4 43 38.3
27.0	115 13 10.2	1 48 17.5	27.0	159 41 56.3	4 38 3.0	27.0	205 5 1.9	4 31 35.4
27.5	121 10 31.9	2 18 13.3	27.5	165 38 57.1	4 49 5.0	27.5	211 17 24.8	4 16 14.2
28.0	127 6 54.7	2 46 32.0	28.0	171 37 0.5	4 56 58.4	28.0	217 32 10.0	3 57 41.5
28.5	133 2 33.0	+ 3 12 57.1	28.5	177 36 17.6	+ 5 1 36.8	28.5	223 49 26.1	+ 3 36 6.7
29.0	138 57 41.2	3 37 13.5	29.0	183 37 0.0	5 2 55.4	29.0	230 9 23.4	3 11 41.1
29.5	144 52 34.0	3 59 7.2	29.5	189 39 20.5	5 0 51.0	29.5	236 32 14.4	2 44 38.5
30.0	150 47 26.6	4 18 25.5	30.0	195 43 33.4	4 55 22.1	30.0	242 58 13.7	2 15 15.1
30.5	156 42 34.8	4 34 57.3	30.5	201 49 54.4	4 46 28.8	30.5	249 27 37.4	1 43 49.3
31.0	162 38 15.8	+ 4 48 32.5	31.0	207 54 41.4	+ 4 34 13.0	31.0	256 0 43.2	+ 1 10 41.7
31.5	168 34 48.1	+ 4 59 2.5	31.5	214 10 14.3	+ 4 18 38.4	31.5	262 37 49.6	+ 0 36 15.4

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.		Day of Month.	NOVEMBER.		Day of Month.	DECEMBER.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	256 0 43.2	+1 10 41.7	1.0	307 26 34.1	-3 20 16.0	1.0	346 45 2.1	-5 11 34.5
1.5	262 37 49.6	0 36 15.4	1.5	314 28 46.3	3 47 31.1	1.5	353 50 25.9	5 15 27.9
2.0	269 19 15.2	+0 0 55.7	2.0	321 34 1.7	4 11 28.9	2.0	0 55 20.2	5 14 33.4
2.5	276 5 17.6	-0 34 49.7	2.5	328 42 9.1	4 31 42.4	2.5	7 59 26.4	5 8 52.9
3.0	282 56 12.2	1 10 30.8	3.0	335 52 51.6	4 47 47.7	3.0	15 2 24.6	4 58 33.5
3.5	289 52 11.0	-1 45 35.6	3.5	343 5 45.6	-4 59 24.5	3.5	22 3 54.0	-4 43 47.2
4.0	296 53 20.8	2 19 30.3	4.0	350 20 21.1	5 6 17.5	4.0	29 3 32.9	4 24 50.4
4.5	303 59 41.7	2 51 39.6	4.5	357 36 2.0	5 8 16.7	4.5	36 0 59.1	4 2 3.8
5.0	311 11 5.7	3 21 27.8	5.0	4 52 7.0	5 5 18.4	5.0	42 55 50.5	3 35 52.2
5.5	318 27 15.3	3 48 19.3	5.5	12 7 50.0	4 57 25.4	5.5	49 47 46.0	3 6 43.3
6.0	325 47 42.6	-4 11 39.9	6.0	19 22 22.9	-4 44 47.2	6.0	56 36 25.7	-2 35 7.2
6.5	333 11 49.1	4 30 58.5	6.5	26 34 56.5	4 27 39.7	6.5	63 21 31.6	2 1 35.5
7.0	340 38 45.5	4 45 48.3	7.0	33 44 42.5	4 6 24.6	7.0	70 2 48.6	1 26 40.8
7.5	348 7 33.3	4 55 48.2	7.5	40 50 56.0	3 41 28.8	7.5	76 40 4.7	0 50 55.3
8.0	355 37 6.8	5 0 44.2	8.0	47 52 57.1	3 13 23.1	8.0	83 13 11.4	-0 14 50.6
8.5	3 6 15.3	-5 0 30.1	8.5	54 50 11.8	-2 42 40.5	8.5	89 42 4.3	+0 21 3.2
9.0	10 33 46.4	4 55 8.2	9.0	61 42 13.5	2 9 55.9	9.0	96 6 42.9	0 56 18.2
9.5	17 58 29.3	4 44 48.9	9.5	68 28 43.6	1 35 43.9	9.5	102 27 11.1	1 30 28.8
10.0	25 19 18.0	4 29 50.3	10.0	75 9 31.5	1 0 38.4	10.0	108 43 37.0	2 3 11.8
10.5	32 35 14.4	4 10 36.7	10.5	81 44 34.5	-0 25 11.6	10.5	114 56 12.7	2 34 7.0
11.0	39 45 29.9	-3 47 37.4	11.0	88 13 57.5	+0 10 6.9	11.0	121 5 14.0	+3 2 56.7
11.5	46 49 27.2	3 21 25.0	11.5	94 37 52.5	0 44 50.0	11.5	127 11 0.7	3 29 25.9
12.0	53 46 41.0	2 52 33.8	12.0	100 56 37.4	1 18 33.6	12.0	133 13 55.7	3 53 21.6
12.5	60 36 57.6	2 21 38.2	12.5	107 10 35.5	1 50 56.4	12.5	139 14 25.0	4 14 32.9
13.0	67 20 14.8	1 49 12.1	13.0	113 20 14.4	2 21 39.9	13.0	145 12 57.2	4 32 50.7
13.5	73 56 40.4	-1 15 47.7	13.5	119 26 5.0	+2 50 27.8	13.5	151 10 2.9	+4 48 7.3
14.0	80 26 30.7	0 41 54.5	14.0	125 28 41.4	3 17 6.0	14.0	157 6 14.9	5 0 16.3
14.5	86 50 9.2	-0 7 59.5	14.5	131 28 39.4	3 41 22.3	14.5	163 2 7.4	5 9 12.5
15.0	93 8 5.7	+0 25 32.9	15.0	137 26 36.1	4 3 5.8	15.0	168 58 15.5	5 14 51.2
15.5	99 20 54.1	0 58 20.8	15.5	143 23 9.3	4 22 6.9	15.5	174 55 14.7	5 17 8.4
16.0	105 29 11.4	+1 30 4.7	16.0	149 18 56.8	+4 38 16.8	16.0	180 53 40.8	+5 16 1.0
16.5	111 33 36.5	2 0 27.4	16.5	155 14 36.0	4 51 27.7	16.5	186 54 9.4	5 11 26.6
17.0	117 34 49.5	2 29 13.2	17.0	161 10 43.3	5 1 32.4	17.0	192 57 15.0	5 3 23.7
17.5	123 33 30.9	2 56 7.9	17.5	167 7 53.5	5 8 24.2	17.5	199 3 30.6	4 51 51.8
18.0	129 30 20.2	3 20 58.5	18.0	173 6 39.7	5 11 57.0	18.0	205 13 27.3	4 36 51.8
18.5	135 25 55.9	+3 43 33.2	18.5	179 7 32.5	+5 12 5.6	18.5	211 27 33.4	+4 18 26.4
19.0	141 20 54.7	4 3 40.5	19.0	185 10 59.9	5 8 45.8	19.0	217 46 14.0	3 56 40.3
19.5	147 15 51.2	4 21 9.9	19.5	191 17 26.4	5 1 54.7	19.5	224 9 49.9	3 31 41.0
20.0	153 11 17.5	4 35 51.8	20.0	197 27 13.0	4 51 30.8	20.0	230 38 37.2	3 3 39.5
20.5	159 7 43.0	4 47 36.8	20.5	203 40 37.0	4 37 34.6	20.5	237 12 46.8	2 32 49.9
21.0	165 5 33.4	+4 56 16.1	21.0	209 57 51.6	+4 20 9.0	21.0	243 52 23.4	+1 59 30.6
21.5	171 5 11.3	5 1 42.3	21.5	216 19 5.6	3 59 19.6	21.5	250 37 25.2	1 24 4.4
22.0	177 6 55.9	5 3 48.9	22.0	222 44 23.7	3 35 15.3	22.0	257 27 44.2	0 46 58.5
22.5	183 11 3.0	5 2 30.7	22.5	229 13 46.4	3 8 8.2	22.5	264 23 5.0	+0 8 44.3
23.0	189 17 44.7	4 57 44.2	23.0	235 47 10.3	2 38 14.3	23.0	271 23 5.8	-0 30 3.1
23.5	195 27 10.0	+4 49 28.0	23.5	242 24 28.3	+2 5 53.4	23.5	278 27 18.5	-1 8 45.6
24.0	201 39 25.1	4 37 42.5	24.0	249 5 30.1	1 31 29.0	24.0	285 35 9.7	1 46 42.9
24.5	207 54 33.3	4 22 31.0	24.5	255 50 2.8	0 55 28.1	24.5	292 46 1.5	2 23 14.2
25.0	214 12 35.8	4 3 59.4	25.0	262 37 51.5	+0 18 20.8	25.0	299 59 12.4	2 57 39.1
25.5	220 33 32.2	3 42 16.5	25.5	269 28 39.7	-0 19 20.3	25.5	307 13 59.2	3 29 19.4
26.0	226 57 21.1	+3 17 34.3	26.0	276 22 10.3	-0 57 0.9	26.0	314 29 38.1	-3 57 40.5
26.5	233 24 0.6	2 50 7.6	26.5	283 18 5.7	1 34 5.2	26.5	321 45 26.1	4 22 11.9
27.0	239 53 28.8	2 20 14.2	27.0	290 16 8.4	2 9 57.7	27.0	329 0 42.7	4 42 28.7
27.5	246 25 44.3	1 48 14.7	27.5	297 16 1.5	2 44 3.3	27.5	336 14 50.6	4 58 11.8
28.0	253 0 46.8	1 14 32.3	28.0	304 17 28.8	3 15 48.4	28.0	343 27 16.5	5 9 8.5
28.5	259 38 37.3	+0 39 32.6	28.5	311 20 14.6	3 44 41.6	28.5	350 37 32.3	-5 15 12.1
29.0	266 19 17.9	+0 3 43.0	29.0	318 23 3.9	4 10 14.3	29.0	357 45 14.7	5 16 21.7
29.5	273 2 51.9	-0 32 27.3	29.5	325 28 42.0	4 32 1.2	29.5	4 50 5.2	5 12 41.8
30.0	279 49 23.7	1 8 27.6	30.0	332 33 54.4	4 49 40.9	30.0	11 51 49.9	5 4 21.7
30.5	286 38 58.2	1 43 46.6	30.5	339 39 26.2	5 2 56.2	30.5	18 50 19.6	4 51 35.3
31.0	293 31 39.6	-2 17 52.4	31.0	346 45 2.1	-5 11 34.5	31.0	25 45 28.4	-4 34 40.0
31.5	300 27 31.2	-2 50 12.8	31.5	353 50 25.9	-5 15 27.9	31.5	32 37 13.3	-4 13 56.1

GREENWICH MEAN NOON.									
Date.	MOON'S EQUATOR.			Longitude of the Moon's Perigee. Daily Motion, + 6'.684	Mean Longitude of Moon's Ascending Node. Daily Motion, - 3'.177	Moon's Mean Longitude.	Mean Solar Days.	Motion of Moon in Mean Longitude	
	i Inclination to the Earth's Equator.	Δ Ascending Node on Earth's Equator to Ascending Node on Ecliptic.	♌' Ascending Node on Earth's Equator.						
Jan. 1	23 51.6	287 41.8	356 27.3	299 51.0	104 26.9	251 52.6	0.1	1 19.06	
11	23 50.8	287 10.6	356 26.7	300 57.8	103 55.2	23 38.5	0.2	2 38.12	
21	23 50.0	286 39.3	356 26.1	302 4.7	103 23.4	155 24.3	0.3	3 57.18	
31	23 49.2	286 8.0	356 25.6	303 11.5	102 51.6	287 10.1	0.4	5 16.23	
Feb. 10	23 48.5	285 36.8	356 25.1	304 18.4	102 19.8	58 56.0	0.5	6 35.29	
20	23 47.7	285 5.6	356 24.5	305 25.2	101 48.1	190 41.8	0.6	7 54.35	
Mar. 1	23 46.9	284 34.3	356 24.0	306 32.0	101 16.3	322 27.6	0.7	9 13.41	
11	23 46.1	284 3.0	356 23.5	307 38.9	100 44.5	94 13.5	0.8	10 32.47	
21	23 45.3	283 31.6	356 23.0	308 45.7	100 12.8	225 59.3	0.9	11 51.53	
31	23 44.5	283 0.3	356 22.5	309 52.6	99 41.0	357 45.2	1.0	13 10.58	
Apr. 10	23 43.7	282 28.9	356 22.0	310 59.4	99 9.2	129 31.0	2.0	26 21.17	
20	23 42.9	281 57.5	356 21.6	312 6.3	98 37.4	261 16.8	3.0	39 31.75	
30	23 42.1	281 26.2	356 21.2	313 13.1	98 5.7	33 2.7	4.0	52 42.33	
May 10	23 41.2	280 54.8	356 20.8	314 19.9	97 33.9	164 48.5	5.0	65 52.92	
20	23 40.4	280 23.4	356 20.4	315 26.8	97 2.1	296 34.4	6.0	79 3.50	
30	23 39.7	279 52.0	356 20.1	316 33.6	96 30.4	68 20.2	7.0	92 14.09	
June 9	23 38.9	279 20.5	356 19.7	317 40.5	95 58.6	200 6.0	8.0	105 24.67	
19	23 38.1	278 49.0	356 19.4	318 47.3	95 26.8	331 51.9	9.0	118 35.25	
29	23 37.3	278 17.6	356 19.1	319 54.1	94 55.0	103 37.7	10.0	131 45.84	
July 9	23 36.5	277 46.1	356 18.8	321 1.0	94 23.3	235 23.5	Hours.	0	
19	23 35.7	277 14.5	356 18.5	322 7.8	93 51.5	7 9.4	1	0 32.94	
29	23 34.8	276 43.0	356 18.2	323 14.7	93 19.7	138 55.2	2	1 5.88	
Aug. 8	23 34.0	276 11.5	356 18.0	324 21.5	92 48.0	270 41.1	3	1 38.82	
18	23 33.2	275 39.9	356 17.8	325 28.4	92 16.2	42 26.9	4	2 11.76	
28	23 32.3	275 8.3	356 17.6	326 35.2	91 44.4	174 12.7	5	2 44.70	
Sept. 7	23 31.5	274 36.7	356 17.4	327 42.0	91 12.6	305 58.6	6	3 17.65	
17	23 30.7	274 5.1	356 17.3	328 48.9	90 40.9	77 44.4	7	3 50.59	
27	23 29.9	273 33.5	356 17.1	329 55.7	90 9.1	209 30.2	8	4 23.53	
Oct. 7	23 29.1	273 1.8	356 17.0	331 2.6	89 37.3	341 16.1	9	4 56.47	
17	23 28.3	272 30.1	356 16.9	332 9.4	89 5.5	113 1.9	10	5 29.41	
27	23 27.5	271 58.5	356 16.9	333 16.3	88 33.8	244 47.8	11	6 2.35	
Nov. 6	23 26.7	271 26.8	356 16.8	334 23.1	88 2.0	16 33.6	12	6 35.29	
16	23 25.9	270 55.0	356 16.8	335 29.9	87 30.2	148 19.4	13	7 8.23	
26	23 25.0	270 23.3	356 16.7	336 36.8	86 58.4	280 5.3	14	7 41.17	
Dec. 6	23 24.2	269 51.6	356 16.7	337 43.6	86 26.7	51 51.1	15	8 14.11	
16	23 23.4	269 19.8	356 16.7	338 50.5	85 54.9	183 36.9	16	8 47.06	
26	23 22.6	268 47.9	356 16.8	339 57.3	85 23.1	315 22.8	17	9 20.00	
36	23 21.8	268 16.1	356 16.8	341 4.1	84 51.4	87 8.6	18	9 52.94	
							19	10 25.88	
							20	10 58.82	
							21	11 31.76	
							22	12 4.70	
							23	12 37.64	

MOON'S LIBRATION. SUN'S ABERRATION AND PARALLAX. 285

QUANTITIES REQUIRED IN COMPUTING THE MOON'S LIBRATION.					SUN'S ABERRATION AND HORIZONTAL PARALLAX.		
ARGUMENT, ($\Omega - \lambda$), or ($\Omega - \lambda - 180^\circ$).					FOR GREENWICH MEAN NOON.		
$\Omega - \lambda$	μ	$\frac{1}{A}$	B	$\Omega - \lambda$	Date.	Aberration. (<i>Struve</i> .)	Hor. Par.
0	.		0	0	1908.	"	"
0	0.0	39	0 0.0	180	Jan. 1	- 20.79	8.95
2	0.0	39	0 3.1	178	11	20.78	8.95
4	0.1	39	0 6.2	176	21	20.77	8.94
6	0.2	39	0 9.3	174	31	20.75	8.93
8	0.2	39	0 12.4	172	Feb. 10	20.71	8.92
10	0.2	39	0 15.4	170	20	- 20.67	8.90
12	0.3	40	0 18.5	168	March 1	20.62	8.87
14	0.3	40	0 21.5	166	11	20.57	8.86
16	0.3	40	0 24.5	164	21	20.51	8.83
18	0.3	41	0 27.4	162	31	20.45	8.81
20	0.4	41	0 30.4	160	April 10	- 20.39	8.78
22	0.4	42	0 33.2	158	20	20.34	8.76
24	0.4	42	0 36.1	156	30	20.28	8.73
26	0.5	43	0 38.9	154	May 10	20.23	8.71
28	0.5	44	0 41.7	152	20	20.19	8.69
30	0.5	45	0 44.4	150	30	- 20.16	8.68
32	0.5	46	0 47.0	148	June 9	20.13	8.67
34	0.5	47	0 49.7	146	19	20.11	8.66
36	0.5	48	0 52.2	144	29	20.10	8.65
38	0.6	49	0 54.7	142	July 9	20.10	8.66
40	0.6	50	0 57.1	140	19	- 20.11	8.66
42	0.6	52	0 59.4	138	29	20.13	8.67
44	0.6	54	1 1.7	136	Aug. 8	20.16	8.68
46	0.6	56	1 3.9	134	18	20.20	8.70
48	0.6	58	1 6.0	132	28	20.24	8.72
50	0.6	60	1 8.0	130	Sept. 7	- 20.29	8.74
52	0.6	63	1 10.0	128	17	20.34	8.76
54	0.5	66	1 11.8	126	27	20.40	8.78
56	0.5	69	1 13.6	124	Oct. 7	20.46	8.81
58	0.5	73	1 15.3	122	17	20.52	8.83
60	0.5	77	1 16.9	120	27	- 20.58	8.86
62	0.5	83	1 18.4	118	Nov. 6	20.63	8.88
64	0.5	89	1 19.8	116	16	20.68	8.90
66	0.4	95	1 21.1	114	26	20.72	8.92
68	0.4	103	1 22.3	112	Dec. 6	20.75	8.93
70	0.4	113	1 23.4	110	16	- 20.77	8.94
72	0.4	125	1 24.4	108	26	20.79	8.95
74	0.3	141	1 25.3	106	36	- 20.79	8.95
76	0.3	160	1 26.1	104			
78	0.2	186	1 26.8	102			
80	0.2	222	1 27.4	100			
82	0.2	278	1 27.9	98			
84	0.1	370	1 28.3	96			
86	0.1	554	1 28.6	94			
88	0.0	1110	1 28.7	92			
90	0.0	∞	1 28.8	90			
μ has the sign of $\tan (\lambda - \Omega)$ A has the sign of $\cos (\Omega - \lambda)$ B has the sign of $\sin (\Omega - \lambda)$ See formulæ, page 442.					Sun's Mean Equatorial Horizontal Parallax. $8''.80; \log = 0.94448$		

PRECESSION AND OBLIQUITY, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

FOR GREENWICH MEAN NOON.

Date.	Precession in Longitude from 1908.0.	Nutation.			Obliquity of Ecliptic. (Peters.)	Date.	Precession in Longitude from 1908.0.	Nutation.			Obliquity of Ecliptic. (Peters.)
		In Longi- tude.	In R. A.	In Obliq- uity.				In Longi- tude.	In R. A.	In Obliq- uity.	
					23° 27'						23° 27'
Jan. 1	- 0.03	- 16.38	- 1.002	- 2.75	1.29	July 4	+ 25.43	- 16.71	- 1.022	- 1.15	2.65
6	+ 0.65	16.18	0.990	2.67	1.37	9	26.11	16.55	1.012	1.07	2.73
11	1.34	16.00	0.979	2.57	1.46	14	26.80	16.40	1.003	0.97	2.82
16	2.03	15.85	0.969	2.46	1.56	19	27.49	16.28	0.995	0.86	2.93
21	2.72	15.72	0.961	2.34	1.67	24	28.18	16.18	0.989	0.75	3.04
26	+ 3.41	- 15.63	- 0.955	- 2.22	1.79	29	+ 28.87	- 16.11	- 0.985	- 0.63	3.15
31	4.09	15.57	0.952	2.08	1.92	Aug. 3	29.55	16.08	0.983	0.49	3.28
Feb. 5	4.78	15.56	0.951	1.94	2.05	8	30.24	16.08	0.984	0.34	3.42
10	5.47	15.59	0.953	1.80	2.19	13	30.93	16.11	0.986	0.20	3.55
15	6.16	15.66	0.957	1.66	2.32	18	31.62	16.18	0.989	- 0.07	3.67
20	+ 6.85	- 15.76	- 0.963	- 1.54	2.44	23	+ 32.31	- 16.27	- 0.995	+ 0.05	3.79
25	7.53	15.90	0.972	1.42	2.55	28	32.99	16.40	1.003	0.16	3.90
Mar. 1	8.22	16.06	0.982	1.31	2.65	Sept. 2	33.68	16.55	1.012	0.26	3.99
6	8.91	16.26	0.994	1.21	2.75	7	34.37	16.73	1.023	0.36	4.09
11	9.60	16.47	1.007	1.12	2.83	12	35.06	16.93	1.036	0.45	4.17
16	+ 10.29	- 16.70	- 1.021	- 1.05	2.89	17	+ 35.75	- 17.14	- 1.049	+ 0.51	4.22
21	10.98	16.92	1.035	1.01	2.93	22	36.44	17.35	1.062	0.56	4.26
26	11.66	17.15	1.049	0.98	2.95	27	37.12	17.57	1.075	0.60	4.30
31	12.35	17.37	1.062	0.96	2.96	Oct. 2	37.81	17.78	1.088	0.63	4.32
Apr. 5	13.04	17.58	1.074	0.96	2.96	7	38.50	17.98	1.099	0.65	4.33
10	+ 13.73	- 17.76	- 1.086	- 0.97	2.94	12	+ 39.19	- 18.16	- 1.110	+ 0.63	4.31
15	14.42	17.93	1.096	1.00	2.91	17	39.88	18.32	1.119	0.60	4.28
20	15.10	18.07	1.105	1.03	2.87	22	40.56	18.45	1.127	0.56	4.23
25	15.79	18.18	1.111	1.07	2.82	27	41.25	18.54	1.133	0.52	4.18
30	16.48	18.25	1.116	1.12	2.77	Nov. 1	41.94	18.59	1.137	0.48	4.13
May 5	+ 17.17	- 18.29	- 1.118	- 1.17	2.71	6	+ 42.63	- 18.60	- 1.138	+ 0.42	4.07
10	17.86	18.29	1.118	1.22	2.65	11	43.32	18.58	1.136	0.36	4.00
15	18.54	18.26	1.116	1.26	2.60	16	44.00	18.52	1.133	0.31	3.95
20	19.23	18.19	1.112	1.30	2.56	21	44.69	18.42	1.127	0.27	3.90
25	19.92	18.10	1.106	1.34	2.52	26	45.38	18.28	1.118	0.24	3.86
30	+ 20.61	- 17.98	- 1.099	- 1.36	2.49	Dec. 1	+ 46.07	- 18.11	- 1.108	+ 0.21	3.82
June 4	21.30	17.83	1.090	1.37	2.47	6	46.76	17.91	1.096	0.19	3.80
9	21.99	17.66	1.080	1.38	2.46	11	47.45	17.70	1.083	0.19	3.79
14	22.67	17.47	1.069	1.37	2.46	16	48.13	17.47	1.069	0.20	3.79
19	23.36	17.28	1.058	1.33	2.49	21	48.82	17.24	1.054	0.23	3.82
24	+ 24.05	- 17.08	- 1.046	- 1.28	2.54	26	+ 49.51	- 16.99	- 1.038	+ 0.29	3.87
29	24.74	16.89	1.034	1.22	2.59	31	50.20	16.74	1.024	0.35	3.93
July 4	+ 25.43	- 16.71	- 1.022	- 1.15	2.65	36	+ 50.89	- 16.51	- 1.010	+ 0.43	4.00

Mean Obliquity, 1908.0.			
Peters	23° 27'	4.04	
Hansen	23° 27'	4.27	
Le Verrier	23° 27'	4.22	
Newcomb	23° 27'	4.51	

Precession for 1908 (Struve). 50.2657 log = 1.70127	
Precession in a Solar day . . . 0.1376 log = 9.13869	
Precession in a Sidereal day . . 0.1372 log = 9.13750	

FOR GREENWICH MEAN NOON.

Date.	$\delta''\psi$	$\delta''\omega$	Date.	$\delta''\psi$	$\delta''\omega$	Date.	$\delta''\psi$	$\delta''\omega$	Date.	$\delta''\psi$	$\delta''\omega$
Jan. 1	"	"	Feb. 16	"	"	Apr. 1	"	"	May 16	"	"
2	- 0.23	- 0.05	17	+ 0.18	- 0.01	2	- 0.03	+ 0.08	17	- 0.25	- 0.02
3	0.13	0.08	18	0.16	+ 0.02	3	0.10	0.06	18	0.19	0.06
4	- 0.01	0.09	19	0.11	0.05	4	0.13	+ 0.02	19	- 0.09	0.09
5	+ 0.11	0.08	20	+ 0.03	0.08	5	0.13	- 0.01	20	+ 0.03	0.09
6	0.20	- 0.05	21	- 0.06	0.09	6	0.09	0.05	21	0.14	0.07
7	0.25	0.00	22	0.16	0.08	7	- 0.03	0.07	22	0.21	- 0.04
8	0.24	+ 0.04	23	0.24	0.05	8	+ 0.04	0.08	23	0.23	+ 0.01
9	0.18	0.06	24	0.28	+ 0.02	9	0.10	0.08	24	0.20	0.05
10	0.10	0.08	25	0.28	- 0.02	10	0.15	0.06	25	0.12	0.08
11	+ 0.01	0.08	26	0.22	0.06	11	0.18	- 0.03	26	+ 0.03	0.09
12	- 0.07	+ 0.06	27	- 0.12	- 0.09	12	+ 0.18	0.00	27	- 0.06	+ 0.08
13	0.11	+ 0.03	28	0.00	0.09	13	0.15	+ 0.03	28	0.13	0.05
14	0.12	- 0.01	29	+ 0.11	0.07	14	0.09	0.06	29	0.15	+ 0.01
15	0.09	0.04	30	0.18	- 0.03	15	+ 0.01	0.08	30	0.13	- 0.03
16	- 0.04	0.07	Mar. 1	0.21	+ 0.01	16	- 0.09	0.09	31	0.09	0.06
17	+ 0.02	0.08	2	0.19	0.05	17	0.18	0.07	1	- 0.02	0.08
18	0.08	0.08	3	0.13	0.08	18	0.24	+ 0.04	2	+ 0.06	0.08
19	0.13	0.06	4	+ 0.04	0.09	19	0.26	0.00	3	0.12	0.07
20	0.16	- 0.03	5	- 0.04	0.08	20	0.24	- 0.04	4	0.16	0.05
21	0.16	0.00	6	0.10	0.05	21	0.16	0.07	5	0.18	- 0.02
22	+ 0.13	+ 0.03	7	- 0.12	+ 0.01	22	- 0.06	- 0.09	6	+ 0.17	+ 0.01
23	+ 0.08	0.06	8	0.11	- 0.02	23	+ 0.05	0.09	7	0.12	0.05
24	- 0.01	0.08	9	- 0.06	0.05	24	0.15	0.06	8	+ 0.05	0.07
25	0.11	0.09	10	0.00	0.07	25	0.20	- 0.02	9	- 0.04	0.09
26	0.20	0.07	11	+ 0.06	0.08	26	0.21	+ 0.02	10	0.13	0.08
27	0.27	+ 0.04	12	0.12	0.07	27	0.16	0.06	11	0.22	0.06
28	0.29	0.00	13	0.16	0.05	28	+ 0.08	0.08	12	0.27	+ 0.03
29	0.26	- 0.04	14	0.18	- 0.02	29	- 0.01	0.09	13	0.27	- 0.01
30	0.18	0.07	15	0.18	+ 0.01	30	0.09	0.07	14	0.23	0.05
31	- 0.07	0.09	16	0.14	0.04	1	0.14	+ 0.04	15	0.13	0.08
Feb. 1	+ 0.05	- 0.08	17	+ 0.07	+ 0.07	May 1	- 0.15	0.00	16	- 0.02	- 0.09
2	0.15	0.06	18	- 0.02	0.08	2	0.12	- 0.04	17	+ 0.10	0.08
3	0.22	- 0.02	19	0.12	0.08	3	- 0.06	0.06	18	0.19	0.05
4	0.23	+ 0.02	20	0.20	0.06	4	+ 0.01	0.08	19	0.24	- 0.01
5	0.19	0.06	21	0.26	+ 0.03	5	0.08	0.08	20	0.23	+ 0.04
6	0.12	0.08	22	0.27	- 0.01	6	0.14	0.06	21	0.17	0.07
7	+ 0.03	0.08	23	0.23	0.05	7	0.18	0.04	22	+ 0.08	0.09
8	- 0.04	0.07	24	0.15	0.08	8	0.18	- 0.01	23	- 0.02	0.08
9	0.10	+ 0.04	25	- 0.04	0.09	9	0.16	+ 0.02	24	0.09	0.06
10	0.11	0.00	26	+ 0.07	0.08	10	0.11	0.05	25	0.14	+ 0.02
11	- 0.09	- 0.04	27	+ 0.16	- 0.05	11	+ 0.03	+ 0.08	26	- 0.14	- 0.01
12	- 0.05	0.06	28	0.20	- 0.01	12	- 0.06	0.09	27	0.10	0.05
13	+ 0.01	0.08	29	0.19	+ 0.04	13	0.15	0.08	28	- 0.04	0.07
14	0.07	0.08	30	0.14	0.07	14	0.23	0.05	29	+ 0.04	0.08
15	0.13	0.06	31	+ 0.06	0.09	15	0.26	+ 0.02	30	0.11	0.07
16	0.17	0.04	Apr. 1	- 0.03	0.08	16	0.25	- 0.02	31	0.16	0.06
17	+ 0.18	- 0.01	2	- 0.10	+ 0.06	17	- 0.19	- 0.06	July 1	+ 0.18	- 0.03

288 TERMS OF SHORT PERIOD IN THE NUTATION, 1908.

FOR GREENWICH MEAN NOON.											
Date.	$\delta''\psi$	$\delta''\omega$	Date.	$\delta''\psi$	$\delta''\omega$	Date.	$\delta''\psi$	$\delta''\omega$	Date.	$\delta''\psi$	$\delta''\omega$
July 1	"	"	Aug. 16	"	"	Oct. 1	"	"	Nov. 16	"	"
2	+ 0.18	- 0.03	17	- 0.04	+ 0.08	2	- 0.19	- 0.08	17	+ 0.20	+ 0.02
3	0.18	0.00	18	0.10	0.05	3	- 0.09	0.09	18	0.14	0.05
4	0.14	+ 0.04	19	0.12	+ 0.01	4	+ 0.02	0.09	19	+ 0.07	0.08
5	+ 0.08	0.07	20	0.11	- 0.03	5	0.12	0.06	20	- 0.03	0.09
6	- 0.01	0.08	21	- 0.06	0.06	6	0.18	- 0.02	21	0.12	0.08
7	0.11	0.09	22	+ 0.01	0.08	7	0.19	+ 0.02	22	0.21	0.06
8	0.20	0.07	23	0.09	0.08	8	0.15	0.06	23	0.26	+ 0.03
9	0.27	+ 0.04	24	0.15	0.07	9	+ 0.07	0.09	24	0.26	- 0.02
10	0.29	0.00	25	0.19	0.05	10	- 0.02	0.09	25	0.22	0.06
	0.26	- 0.04	26	0.21	- 0.02		0.10	0.07		0.14	0.08
11	- 0.19	- 0.07	27	+ 0.19	+ 0.02	11	- 0.14	+ 0.04	26	- 0.03	- 0.09
12	- 0.08	0.09	28	0.14	0.05	12	0.14	0.00	27	+ 0.08	0.08
13	+ 0.05	0.09	29	+ 0.06	0.07	13	0.11	- 0.04	28	0.17	0.05
14	0.15	0.06	30	- 0.03	0.09	14	- 0.04	0.07	29	0.21	- 0.01
15	0.22	- 0.02	31	0.13	0.08	15	+ 0.05	0.08	30	0.20	+ 0.04
16	0.23	+ 0.02		0.22	0.06	16	0.12	0.08	Dec. 1	0.14	0.07
17	0.19	0.06	Sept. 1	0.28	+ 0.03	17	0.19	0.06	2	+ 0.05	0.09
18	0.12	0.09	2	0.29	- 0.01	18	0.22	- 0.04	3	- 0.05	0.09
19	+ 0.02	0.08	3	0.25	0.05	19	0.22	0.00	4	0.13	0.06
20	- 0.06	0.07	4	0.17	0.08	20	0.19	+ 0.03	5	0.17	+ 0.02
21	- 0.11	+ 0.04	5	- 0.06	- 0.09	21	+ 0.12	+ 0.06	6	- 0.16	- 0.02
22	0.13	0.00	6	+ 0.05	0.08	22	+ 0.04	0.08	7	0.11	0.05
23	0.10	- 0.04	7	0.14	0.05	23	- 0.06	0.09	8	- 0.03	0.08
24	- 0.05	0.07	8	0.19	- 0.01	24	0.15	0.07	9	+ 0.06	0.09
25	+ 0.03	0.08	9	0.19	+ 0.04	25	0.22	0.05	10	0.14	0.08
26	0.10	0.08	10	0.14	0.07	26	0.26	+ 0.01	11	0.19	0.05
27	0.15	0.06	11	+ 0.06	0.09	27	0.26	- 0.03	12	0.21	- 0.02
28	0.19	0.04	12	- 0.03	0.08	28	0.20	0.07	13	0.20	+ 0.01
29	0.19	- 0.01	13	0.10	0.06	29	- 0.11	0.09	14	0.16	0.04
30	0.16	+ 0.03	14	0.13	+ 0.02	30	0.00	0.09	15	+ 0.09	0.07
31	+ 0.11	+ 0.06	15	- 0.12	- 0.02	31	+ 0.10	- 0.07	16	0.00	+ 0.08
Aug. 1	+ 0.02	0.07	16	- 0.07	0.05	Nov. 1	0.17	- 0.04	17	- 0.10	0.08
2	- 0.07	0.08	17	0.00	0.07	2	0.20	+ 0.01	18	0.19	0.07
3	0.17	0.08	18	+ 0.07	0.08	3	0.17	0.05	19	0.25	+ 0.04
4	0.25	0.05	19	0.14	0.08	4	+ 0.10	0.08	20	0.28	0.00
5	0.29	+ 0.01	20	0.19	0.06	5	0.00	0.09	21	0.25	- 0.04
6	0.29	- 0.03	21	0.22	- 0.03	6	- 0.08	0.08	22	0.18	0.08
7	0.23	0.06	22	0.21	+ 0.01	7	0.14	0.05	23	- 0.07	0.09
8	0.13	0.09	23	0.17	0.04	8	0.16	+ 0.01	24	+ 0.05	0.09
9	- 0.01	0.09	24	+ 0.09	0.07	9	0.14	- 0.03	25	0.15	0.06
10	+ 0.10	- 0.07	25	- 0.01	+ 0.08	10	- 0.08	- 0.06	26	+ 0.21	- 0.02
11	0.18	0.04	26	0.09	0.08	11	+ 0.01	0.08	27	0.22	+ 0.02
12	0.22	- 0.02	27	0.18	0.07	12	0.09	0.08	28	0.18	0.06
13	0.20	+ 0.05	28	0.25	+ 0.04	13	0.16	0.07	29	+ 0.09	0.09
14	0.13	0.08	29	0.28	0.00	14	0.21	0.05	30	- 0.01	0.09
15	+ 0.05	0.09	30	0.26	- 0.04	15	0.22	- 0.01	31	0.09	0.07
16	- 0.04	+ 0.08	Oct. 1	- 0.19	- 0.08	16	+ 0.20	+ 0.02	32	- 0.15	+ 0.04

PART II

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON.

FORMULÆ FOR THE REDUCTION OF THE POSITIONS OF THE FIXED STARS, USING THE NOTATION OF BESSEL, AND THE CONSTANTS OF STRUVE AND PETERS.

NOTATION.

- τ , the time, reckoned in units of one year, from the beginning of the Besselian fictitious year, (1908, January 1^d.037, Washington mean time),
 a_0, d_0 , the star's mean right ascension and declination at the beginning of the fictitious year,
 α, δ , the star's apparent right ascension and declination at the time τ ,
 μ, μ' , the annual proper motion in right ascension and declination,
 $\odot$, the Sun's true longitude,
 Ω , the longitude of the Moon's ascending node,
 ω , the obliquity of the ecliptic,

- Γ , the longitude of the Sun's perigee,
 Γ' , the longitude of the Moon's perigee,
 ζ , the Moon's mean longitude.

BESSELIAN STAR-NUMBERS.

$$\begin{aligned} A &= \tau - 0.342\ 54 \sin \Omega \\ &+ 0.004\ 10 \sin 2\ \Omega \\ &- 0.025\ 19 \sin 2\ \odot \\ &+ 0.002\ 93 \sin (\odot + 81^\circ\ 51') \\ &- 0.004\ 05 \sin 2\ \zeta \\ &+ 0.001\ 35 \sin (\zeta - \Gamma') \\ B &= - 9.2241 \cos \Omega \\ &+ 0.0895 \cos 2\ \Omega \\ &- 0.5506 \cos 2\ \odot \\ &- 0.0092 \cos (\odot + 281^\circ\ 21') \\ &- 0.0885 \cos 2\ \zeta \\ C &= - 20.4451 \cos \omega \cos \odot \\ D &= - 20.4451 \sin \odot \\ E &= - 0.0443 \sin \Omega + 0''.0014 \sin 2\ \Omega - 0''.0032 \sin 2\ \odot \end{aligned}$$

BESSEL'S Star-Constants.

$$\begin{aligned} a &= 3''.072\ 87 + 1''.336\ 76 \sin a_0 \tan d_0 = \text{precession in right ascension} \\ b &= \frac{1}{15} \cos a_0 \tan d_0 \\ c &= \frac{1}{15} \cos a_0 \sec d_0 \\ d &= \frac{1}{15} \sin a_0 \sec d_0 \\ a' &= 20''.0514 \cos a_0 = \text{precession in declination} \\ b' &= - \sin a_0 \\ c' &= \tan \omega \cos d_0 - \sin a_0 \sin d_0 \\ d' &= \cos a_0 \sin d_0 \end{aligned}$$

Reduction to Apparent Position.

$$\begin{aligned} a &= a_0 + \tau \mu + Aa + Bb + Cc + Dd + \frac{1}{15} E & (\text{in time}) \\ \delta &= d_0 + \tau \mu' + Aa' + Bb' + Cc' + Dd' & (\text{in arc}) \end{aligned}$$

INDEPENDENT STAR-NUMBERS.

$$\begin{aligned} f &= 46''.0930 A + E \text{ (in arc)} = 3''.072\ 87 A + \frac{1}{15} E & (\text{in time}) \\ f' &= 46''.0930 A' + E \text{ (in arc)} = 3''.072\ 87 A' + \frac{1}{15} E & (\text{in time}) \\ g \sin G &= B & g' \sin G' &= B' & h \sin H &= C \\ g \cos G &= 20''.0514 A & g' \cos G' &= 20''.0514 A' & h \cos H &= D & i &= C \tan \omega \end{aligned}$$

Reduction to Apparent Position.

$$\begin{aligned} a &= a_0 + f + \tau \mu + \frac{1}{15} g \sin (G + a_0) \tan d_0 + \frac{1}{15} h \sin (H + a_0) \sec d_0 & (\text{in time}) \\ \delta &= d_0 + \tau \mu' + g \cos (G + a_0) + h \cos (H + a_0) \sin d_0 + i \cos d_0 & (\text{in arc}) \end{aligned}$$

NOTES.—(1) The quantities A' , B' , f' , g' , and G' are to be used instead of A , B , f , g , and G whenever it is necessary to omit the short period terms, as, for example, in computing the ephemeris of a star at ten-day intervals.

(2) The independent star-numbers are more convenient, when only one or two apparent positions of a star are required, or when Bessel's star-constants are not known with sufficient accuracy. Otherwise, the Besselian star-numbers are more convenient.

(3) In using the star-constants of the *British Association Catalogue*, $a, b, c, d, a', b', c', d'$, with the star-numbers of this Ephemeris, the quantities to be formed are $Ac, Bd, Ca, Db, -Ac', -Bd', -Ca', -Db'$.

BESSELIAN STAR-NUMBERS, 1908.

291

(CONSTANTS OF STRUVE AND PETERS.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	
Jan. 0	-9.51958	+0.4503	-0.48629	+1.30472	Feb. 15	-9.26219	+0.2147	-1.19249	+1.05646	
1	9.51251	0.4512	0.53057	1.30337	16	9.25814	0.1968	1.19752	1.04484	
2	9.50493	0.4493	0.57062	1.30187	17	9.25588	0.1805	1.20236	1.03276	
3	9.49734	0.4444	0.60716	1.30024	18	9.25484	0.1679	1.20701	1.02020	
4	9.49028	0.4370	0.64074	1.29846	19	9.25424	0.1604	1.21148	1.00714	
h					(10.0)					
5	-9.48419	+0.4279	-0.67177	+1.29653	20	-9.25308	+0.1583	-1.21577	+0.99354	
(7.0)	6	9.47926	0.4184	0.70061	21	9.25049	0.1606	1.21988	0.97936	
7	9.47548	0.4099	0.72751	1.29224	22	9.24588	0.1651	1.22382	0.96458	
8	9.47256	0.4035	0.75272	1.28987	23	9.23900	0.1695	1.22759	0.94913	
9	9.46998	0.4001	0.77640	1.28735	24	9.23002	0.1713	1.23119	0.93299	
10	-9.46722	+0.3996	-0.79873	+1.28467	25	-9.21956	+0.1690	-1.23463	+0.91609	
11	9.46378	0.4015	0.81983	1.28184	26	9.20844	0.1613	1.23790	0.89838	
12	9.45930	0.4046	0.83982	1.27886	27	9.19772	0.1482	1.24102	0.87978	
13	9.45364	0.4075	0.85880	1.27572	28	9.18840	0.1307	1.24398	0.86021	
14	9.44687	0.4087	0.87684	1.27242	29	9.18121	0.1106	1.24679	0.83960	
15	-9.43933	+0.4074	-0.89404	+1.26895	Mar. 1	-9.17644	+0.0904	-1.24945	+0.81782	
16	9.43157	0.4029	0.91044	1.26532	2	9.17380	0.0732	1.25196	0.79477	
17	9.42418	0.3951	0.92611	1.26152	3	9.17254	0.0616	1.25432	0.77030	
18	9.41770	0.3848	0.94110	1.25755	4	9.17164	0.0569	1.25653	0.74424	
19	9.41249	0.3730	0.95545	1.25340	5	9.17003	0.0589	1.25860	0.71638	
h					(11.0)					
(8.0)	20	-9.40863	+0.3613	-0.96921	+1.24908	6	-9.16682	+0.0656	-1.26053	+0.68650
21	9.40593	0.3511	0.98242	1.24458	7	9.16137	0.0742	1.26231	0.65429	
22	9.40393	0.3437	0.99509	1.23989	8	9.15357	0.0814	1.26396	0.61936	
23	9.40197	0.3397	1.00728	1.23501	9	9.14383	0.0848	1.26546	0.58127	
24	9.39942	0.3391	1.01900	1.22994	10	9.13287	0.0825	1.26683	0.53939	
25	-9.39568	+0.3408	-1.03027	+1.22467	11	-9.12182	+0.0736	-1.26806	+0.49292	
26	9.39039	0.3435	1.04113	1.21920	12	9.11193	0.0587	1.26916	0.44076	
27	9.38351	0.3454	1.05158	1.21352	13	9.10418	0.0392	1.27012	0.38136	
28	9.37522	0.3450	1.06165	1.20763	14	9.09920	0.0176	1.27095	0.31242	
29	9.36605	0.3414	1.07136	1.20152	15	9.09695	9.9973	1.27164	0.23033	
30	-9.35668	+0.3340	-1.08072	+1.19519	16	-9.09674	+9.9822	-1.27221	+0.12891	
31	9.34784	0.3231	1.08975	1.18862	17	9.09740	9.9746	1.27264	9.99627	
Feb. 1	9.34023	0.3095	1.09846	1.18182	18	9.09767	9.9757	1.27294	9.80428	
2	9.33421	0.2947	1.10686	1.17478	19	9.09621	9.9843	1.27311	+9.45174	
3	9.32988	0.2805	1.11497	1.16748	20	9.09202	9.9974	1.27315	-8.85217	
h					h					
(9.0)	4	-9.32691	+0.2688	-1.12279	+1.15992	(12.0)				
5	9.32470	0.2607	1.13033	1.15209	21	-9.08454	+0.0111	-1.27306	-9.62848	
6	9.32257	0.2570	1.13762	1.14398	22	9.07383	0.0220	1.27283	9.89137	
7	9.31973	0.2570	1.14464	1.13559	23	9.06043	0.0275	1.27248	0.05381	
8	9.31557	0.2595	1.15141	1.12689	24	9.04540	0.0260	1.27200	0.17161	
9	-9.30980	+0.2624	-1.15795	+1.11788	25	9.03023	0.0173	1.27139	0.26403	
10	9.30246	0.2639	1.16425	1.10855	26	-9.01649	+0.0023	-1.27065	-0.34006	
11	9.29394	0.2622	1.17032	1.09887	27	9.00544	9.9831	1.26978	0.40459	
12	9.28484	0.2563	1.17618	1.08884	28	8.99778	9.9633	1.26877	0.46062	
13	9.27600	0.2460	1.18182	1.07845	29	8.99339	9.9466	1.26764	0.51011	
14	-9.26823	+0.2317	-1.18726	+1.06766	30	8.99145	9.9368	1.26637	0.55439	
15	-9.26219	+0.2147	-1.19249	+1.05646	31	-8.99043	+9.9362	-1.26497	-0.59443	
					Apr. 1	-8.98865	+9.9448	-1.26344	-0.63095	

$$E = -0.04 = -0.003$$

[Eph 03]

(CONSTANTS OF STRUVE AND PETERS.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
Apr. 1	-8.98865	+9.9448	-1.26344	-0.63095	May 17	+8.10857	+0.1349	-1.01104	-1.23342
2	8.98466	9.9602	1.26178	0.66450	18	8.25334	0.1363	0.99967	1.23810
3	8.97745	9.9787	1.25998	0.69550	19	8.35774	0.1320	0.98787	1.24260
4	8.96642	9.9963	1.25804	0.72430	20	8.43329	0.1233	0.97562	1.24694
5	8.95182	0.0096	1.25597	0.75117	21	8.48686	0.1125	0.96289	1.25111
h (13.0) 6	-8.93450	+0.0164	-1.25376	-0.77634	h (16.0) 22	+8.52401	+0.1021	-0.94965	-1.25512
7	8.91603	0.0158	1.25142	0.79999	23	8.54986	0.0950	0.93588	1.25897
8	8.89840	0.0080	1.24893	0.82228	24	8.56961	0.0933	0.92153	1.26266
9	8.88332	9.9946	1.24630	0.84336	25	8.58760	0.0979	0.90657	1.26620
10	8.87221	9.9783	1.24354	0.86332	26	8.60799	0.1081	0.89096	1.26960
11	-8.86570	+9.9627	-1.24062	-0.88227	27	+8.63377	+0.1218	-0.87463	-1.27284
12	8.86303	9.9517	1.23756	0.90029	28	8.66539	0.1363	0.85755	1.27594
13	8.86255	9.9486	1.23436	0.91747	29	8.70148	0.1490	0.83965	1.27889
14	8.86201	9.9547	1.23100	0.93386	30	8.73973	0.1578	0.82086	1.28170
15	8.85890	9.9688	1.22750	0.94952	31	8.77706	0.1612	0.80110	1.28437
16	-8.85126	+9.9880	-1.22383	-0.96451	June 1	+8.81104	+0.1590	-0.78028	-1.28690
17	8.83771	0.0085	1.22002	0.97887	2	8.83992	0.1517	0.75828	1.28930
18	8.81790	0.0266	1.21604	0.99263	3	8.86297	0.1408	0.73500	1.29156
19	8.79197	0.0397	1.21190	1.00585	4	8.88018	0.1284	0.71027	1.29369
20	8.76103	0.0461	1.20760	1.01855	5	8.89248	0.1173	0.68393	1.29569
h (14.0) 21	-8.72730	+0.0454	-1.20313	-1.03076	h (17.0) 6	+8.90124	+0.1100	-0.65577	-1.29756
22	8.69364	0.0383	1.19848	1.04251	7	8.90859	0.1082	0.62553	1.29930
23	8.66314	0.0267	1.19367	1.05382	8	8.91651	0.1124	0.59293	1.30091
24	8.63829	0.0137	1.18867	1.06472	9	8.92696	0.1216	0.55753	1.30239
25	8.62014	0.0026	1.18349	1.07522	10	8.94116	0.1334	0.51888	1.30375
26	-8.60799	+9.9968	-1.17812	-1.08535	11	+8.95933	+0.1452	-0.47633	-1.30498
27	8.59912	9.9985	1.17257	1.09512	12	8.98073	0.1545	0.42904	1.30609
28	8.58928	0.0082	1.16681	1.10455	13	9.00385	0.1593	0.37573	1.30708
29	8.57438	0.0242	1.16086	1.11365	14	9.02690	0.1586	0.31505	1.30794
30	8.55072	0.0435	1.15470	1.12244	15	9.04844	0.1522	0.24423	1.30868
May 1	-8.51548	+0.0627	-1.14833	-1.13093	16	+9.06729	+0.1409	-0.15944	-1.30930
2	8.46642	0.0786	1.14172	1.13915	17	9.08283	0.1265	0.05383	1.30980
3	8.40157	0.0893	1.13492	1.14705	18	9.09486	0.1114	0.91385	1.31017
4	8.32056	0.0936	1.12788	1.15470	19	9.10391	0.0982	0.70582	1.31043
5	8.22557	0.0915	1.12060	1.16209	20	9.11103	0.0897	-0.29160	1.31056
h (15.0) 6	-8.12090	+0.0842	-1.11307	-1.16924	h (18.0) 21	+9.11734	+0.0871	+0.06668	-1.31058
7	8.01494	0.0736	1.10528	1.17614	22	9.12411	0.0907	0.63230	1.31048
8	7.91855	0.0626	1.09723	1.18281	23	9.13235	0.0988	0.86980	1.31025
9	7.84198	0.0544	1.08891	1.18926	24	9.14264	0.1089	0.02238	1.30990
10	7.78247	0.0516	1.08031	1.19548	25	9.15506	0.1181	0.13497	1.30944
11	-7.72263	+0.0557	-1.07140	-1.20149	26	+9.16906	+0.1240	+0.22420	-1.30885
12	7.62531	0.0664	1.06220	1.20730	27	9.18372	0.1246	0.29808	1.30814
13	-7.39794	0.0818	1.05267	1.21290	28	9.19803	0.1190	0.36109	1.30731
14	+5.95424	0.0990	1.04281	1.21832	29	9.21098	0.1073	0.41600	1.30636
15	7.55630	0.1151	1.03259	1.22354	30	9.22194	0.0906	0.46463	1.30528
16	+7.89982	+0.1277	1.02201	-1.22857	July 1	+9.23047	+0.0708	+0.50825	-1.30408
17	+8.10857	+0.1349	-1.01104	-1.23342	2	+9.23672	+0.0511	+0.54773	-1.30276

E = - 0".05 = - 0".003

[Eph 08]

(CONSTANTS OF STRUVE AND PETERS.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
July 1	+ 9.23047	+ 0.0708	+ 0.50825	- 1.30408	Aug. 16	+ 9.48118	+ 8.7839	+ 1.18040	- 1.08113
2	9.23672	0.0511	0.54773	1.30276	17	9.48365	8.8519	1.18563	1.07096
3	9.24115	0.0344	0.58388	1.30131	18	9.48715	8.9330	1.19068	1.06042
4	9.24464	0.0234	0.61711	1.29974	19	9.49164	8.9841	1.19555	1.04949
5	9.24810	0.0197	0.64786	1.29804	20	9.49685	8.9800	1.20025	1.03814
h (19.0) 6	+ 9.25245	+ 0.0226	+ 0.67646	- 1.29621	h (22.0) 21	+ 9.50235	+ 8.8921	+ 1.20478	- 1.02635
7	9.25838	0.0301	0.70317	1.29426	22	9.50762	+ 8.6274	1.20914	1.01410
8	9.26628	0.0390	0.72823	1.29217	23	9.51218	- 7.9542	1.21334	1.00137
9	9.27609	0.0459	0.75180	1.28996	24	9.51571	8.8488	1.21738	0.98812
10	9.28728	0.0480	0.77405	1.28761	25	9.51806	9.1287	1.22126	0.97431
11	+ 9.29903	+ 0.0433	+ 0.79510	- 1.28513	26	+ 9.51931	- 9.2844	+ 1.22499	- 0.95992
12	9.31046	0.0310	0.81506	1.28251	27	9.51978	9.3749	1.22856	0.94490
13	9.32085	0.0114	0.83402	1.27976	28	9.51986	9.4218	1.23199	0.92921
14	9.32960	9.9860	0.85209	1.27687	29	9.52009	9.4355	1.23526	0.91279
15	9.33650	9.9574	0.86931	1.27383	30	9.52097	9.4234	1.23839	0.89560
16	+ 9.34169	+ 9.9294	+ 0.88577	- 1.27066	31	+ 9.52288	- 9.3943	+ 1.24138	- 0.87755
17	9.34557	9.9061	0.90151	1.26734	Sept. 1	9.52592	9.3596	1.24422	0.85859
18	9.34871	9.8911	0.91659	1.26387	2	9.52999	9.3355	1.24692	0.83862
19	9.35190	9.8858	0.93105	1.26025	3	9.53478	9.3375	1.24948	0.81756
20	9.35577	9.8888	0.94493	1.25648	4	9.53985	9.3725	1.25191	0.79526
h (20.0) 21	+ 9.36086	+ 9.8970	+ 0.95827	- 1.25255	h (23.0) 5	+ 9.54473	- 9.4336	+ 1.25420	- 0.77163
22	9.36727	9.9055	0.97109	1.24846	6	9.54894	9.5066	1.25635	0.74650
23	9.37494	9.9101	0.98344	1.24421	7	9.55220	9.5781	1.25837	0.71967
24	9.38314	9.9072	0.99532	1.23980	8	9.55443	9.6386	1.26026	0.69094
25	9.39151	9.8943	1.00678	1.23522	9	9.55574	9.6838	1.26201	0.66001
26	+ 9.39933	+ 9.8705	+ 1.01783	- 1.23046	10	+ 9.55638	- 9.7119	+ 1.26364	- 0.62656
27	9.40603	9.8361	1.02848	1.22553	11	9.55681	9.7233	1.26513	0.59016
28	9.41128	9.7929	1.03877	1.22042	12	9.55744	9.7195	1.26650	0.55027
29	9.41500	9.7447	1.04870	1.21513	13	9.55866	9.7037	1.26774	0.50618
30	9.41741	9.6975	1.05830	1.20964	14	9.56074	9.6808	1.26885	0.45692
31	+ 9.41894	+ 9.6586	+ 1.06756	- 1.20396	15	+ 9.56373	- 9.6573	+ 1.26983	- 0.40116
Aug. 1	9.42022	9.6342	1.07652	1.19809	16	9.56745	9.6416	1.27068	0.33702
2	9.42190	9.6268	1.08518	1.19201	17	9.57157	9.6404	1.27141	0.26151
3	9.42453	9.6335	1.09356	1.18571	18	9.57567	9.6565	1.27201	0.16982
4	9.42849	9.6466	1.10166	1.17920	19	9.57935	9.6870	1.27248	0.05321
h (21.0) 5	+ 9.43383	+ 9.6578	+ 1.10949	- 1.17247	h (0.0) 20	+ 9.58225	- 9.7255	+ 1.27283	- 0.89302
6	9.44030	9.6599	1.11706	1.16550	21	9.58418	9.7643	1.27305	9.63601
7	9.44744	9.6471	1.12439	1.15830	22	9.58516	9.7975	1.27314	- 8.91930
8	9.45467	9.6150	1.13148	1.15085	23	9.58536	9.8209	1.27311	+ 9.42597
9	9.46136	9.5603	1.13834	1.14314	24	9.58516	9.8324	1.27295	9.78993
10	+ 9.46705	+ 9.4797	+ 1.14497	- 1.13517	25	+ 9.58497	- 9.8315	+ 1.27266	+ 9.98516
11	9.47153	9.3709	1.15138	1.12693	26	9.58523	9.8195	1.27225	0.11930
12	9.47467	9.2330	1.15759	1.11839	27	9.58628	9.7989	1.27170	0.22160
13	9.47675	9.0704	1.16359	1.10956	28	9.58835	9.7738	1.27103	0.30427
14	9.47820	8.9063	1.16938	1.10042	29	9.59140	9.7500	1.27023	0.37362
15	+ 9.47950	+ 8.7945	+ 1.17499	- 1.09094	30	+ 9.59523	- 9.7341	+ 1.26929	+ 0.43332
16	+ 9.48118	+ 8.7839	+ 1.18040	- 1.08113	Oct. 1	+ 9.59946	- 9.7307	+ 1.26823	+ 0.48571

E = - 0".04 = - 0s.003

[Eph 08]

BESSELIAN STAR NUMBERS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
Oct. 1	+ 9.59946	- 9.7307	+ 1.26823	+ 0.48571	Nov. 16	+ 9.70973	- 9.5691	+ 1.03739	+ 1.22113
2	9.60367	9.7416	1.26703	0.53236	17	9.71077	9.5823	1.02647	1.22649
3	9.60746	9.7640	1.26571	0.57438	18	9.71162	9.5758	1.01513	1.23166
4	9.61054	9.7921	1.26424	0.61260	19	9.71261	9.5474	1.00334	1.23663
5	9.61276	9.8197	1.26265	0.64762	h (4.0) 20	9.71406	9.4969	0.99108	1.24141
h (1.0) 6	+ 9.61415	- 9.8417	+ 1.26091	+ 0.67992	21	+ 9.71621	- 9.4257	+ 0.97831	+ 1.24602
7	9.61490	9.8547	1.25904	0.70988	22	9.71912	9.3392	0.96502	1.25044
8	9.61535	9.8565	1.25704	0.73780	23	9.72270	9.2502	0.95116	1.25468
9	9.61591	9.8468	1.25489	0.76393	24	9.72679	9.1816	0.93669	1.25875
10	9.61693	9.8267	1.25260	0.78846	25	9.73107	9.1587	0.92159	1.26265
11	+ 9.61867	- 9.7991	+ 1.25016	+ 0.81157	26	+ 9.73523	- 9.1892	+ 0.90579	+ 1.26638
12	9.62121	9.7683	1.24758	0.83341	27	9.73901	9.2550	0.88925	1.26995
13	9.62448	9.7404	1.24485	0.85408	28	9.74222	9.3292	0.87191	1.27335
14	9.62827	9.7219	1.24197	0.87371	29	9.74477	9.3929	0.85370	1.27659
15	9.63218	9.7171	1.23894	0.89238	30	9.74675	9.4355	0.83455	1.27968
16	+ 9.63586	- 9.7267	+ 1.23576	+ 0.91016	Dec. 1	+ 9.74836	- 9.4527	+ 0.81437	+ 1.28261
17	9.63895	9.7473	1.23242	0.92712	2	9.74986	9.4426	0.79305	1.28538
18	9.64125	9.7724	1.22892	0.94334	3	9.75152	9.4040	0.77049	1.28800
19	9.64271	9.7955	1.22525	0.95885	h (5.0) 4	9.75360	9.3369	0.74654	1.29048
20	9.64345	9.8116	1.22142	0.97371	5	9.75624	9.2423	0.72104	1.29280
h (2.0) 21	+ 9.64374	- 9.8174	+ 1.21743	+ 0.98796	6	+ 9.75946	- 9.1294	+ 0.69380	+ 1.29497
22	9.64393	9.8106	1.21326	1.00164	7	9.76316	9.0224	0.66458	1.29700
23	9.64443	9.7913	1.20891	1.01478	8	9.76711	8.9643	0.63310	1.29889
24	9.64556	9.7609	1.20438	1.02742	9	9.77104	8.9908	0.59900	1.30063
25	9.64753	9.7225	1.19968	1.03958	10	9.77468	9.0846	0.56183	1.30222
26	+ 9.65040	- 9.6816	+ 1.19478	+ 1.05128	11	+ 9.77781	- 9.1989	+ 0.52102	+ 1.30368
27	9.65406	9.6460	1.18969	1.06255	12	9.78033	9.3021	0.47581	1.30500
28	9.65818	9.6233	1.18441	1.07342	13	9.78223	9.3804	0.42517	1.30617
29	9.66243	9.6188	1.17892	1.08389	14	9.78364	9.4304	0.36767	1.30721
30	9.66644	9.6316	1.17323	1.09399	15	9.78478	9.4518	0.30119	1.30810
31	+ 9.66992	- 9.6562	+ 1.16732	+ 1.10374	16	+ 9.78593	- 9.4453	+ 0.22248	+ 1.30886
Nov. 1	9.67268	9.6839	1.16120	1.11315	17	9.78737	9.4130	0.12608	1.30948
2	9.67471	9.7072	1.15485	1.12223	18	9.78931	9.3583	0.00177	1.30997
3	9.67613	9.7203	1.14827	1.13100	19	9.79186	9.2894	9.82669	1.31031
4	9.67723	9.7195	1.14145	1.13947	20	9.79504	9.2217	9.52832	1.31052
h (3.0) 5	+ 9.67831	- 9.7032	+ 1.13438	+ 1.14766	h (6.0) 21	+ 9.79866	- 9.1796	+ 7.59821	+ 1.31059
6	9.67968	9.6712	1.12706	1.15556	22	9.80253	9.1864	- 9.51807	1.31052
7	9.68164	9.6249	1.11947	1.16319	23	9.80636	9.2430	9.82165	1.31032
8	9.68431	9.5685	1.11161	1.17057	24	9.80991	9.3284	9.99851	1.30998
9	9.68766	9.5103	1.10346	1.17769	25	9.81299	9.4180	0.12374	1.30950
10	+ 9.69150	- 9.4613	+ 1.09502	+ 1.18457	26	+ 9.81551	- 9.4962	- 0.22071	+ 1.30888
11	9.69558	9.4339	1.08626	1.19122	27	9.81751	9.5562	0.29982	1.30812
12	9.69955	9.4354	1.07719	1.19763	28	9.81910	9.5952	0.36060	1.30722
13	9.70309	9.4615	1.06778	1.20383	29	9.82049	9.6133	0.42434	1.30619
14	9.70600	9.5006	1.05802	1.20980	30	9.82196	9.6120	0.47517	1.30501
15	+ 9.70819	- 9.5399	+ 1.04790	+ 1.21557	31	+ 9.82369	- 9.5969	- 0.52054	+ 1.30370
16	+ 9.70973	- 9.5691	+ 1.03739	+ 1.22113	32	+ 9.82586	- 9.5708	- 0.56149	+ 1.30224

E - - 0".05 - - 0".003

[Eph 08]

(CONSTANTS OF STRUVE AND PETERS.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		G		H		Log g .	Log h .	i	Log i .		
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.						
Jan.	0	-0.0015	-1.019	-1.007	156 57.9	10 27.9	351 21.7	23 25.4	+0.85781	+1.30967	-1.33	-0.1236	
	1	+0.0013	1.003	0.996	156 35.1	10 26.3	350 25.3	23 21.7	0.85197	1.30946	1.47	0.1678	
	2	0.0040	0.986	0.986	156 18.7	10 25.2	349 28.9	23 17.9	0.84530	1.30923	1.61	0.2079	
	3	0.0067	0.969	0.975	156 10.7	10 24.7	348 32.4	23 14.2	0.83815	1.30898	1.76	0.2444	
	4	0.0095	0.953	0.964	156 11.8	10 24.8	347 35.8	23 10.4	0.83103	1.30871	1.90	0.2780	
	h (7.0)	5	0.0122	-0.940	-0.953	156 20.5	10 25.4	346 39.1	23 6.6	+0.82445	+1.30842	-2.04	-0.3090
	6	0.0150	0.929	0.942	156 33.7	10 26.2	345 42.4	23 2.8	0.81880	1.30811	2.18	0.3379	
	7	0.0177	0.921	0.932	156 47.3	10 27.2	344 45.6	22 59.0	0.81428	1.30778	2.32	0.3649	
	8	0.0204	0.915	0.921	156 57.2	10 27.8	343 48.7	22 55.2	0.81082	1.30744	2.46	0.3900	
	9	0.0232	0.910	0.911	156 59.7	10 28.0	342 51.7	22 51.4	0.80811	1.30707	2.59	0.4137	
	10	0.0259	-0.904	-0.900	156 53.1	10 27.5	341 54.7	22 47.6	+0.80570	+1.30668	-2.73	-0.4360	
	11	0.0286	0.897	0.890	156 37.8	10 26.5	340 57.5	22 43.8	0.80309	1.30628	2.86	0.4571	
	12	0.0314	0.888	0.879	156 15.9	10 25.1	340 0.3	22 40.0	0.79982	1.30586	3.00	0.4771	
	13	0.0341	0.876	0.869	155 50.9	10 23.4	339 2.9	22 36.2	0.79557	1.30543	3.13	0.4961	
	14	0.0369	0.863	0.859	155 26.9	10 21.8	338 5.4	22 32.4	0.79017	1.30497	3.27	0.5141	
	15	0.0396	-0.848	-0.848	155 8.3	10 20.6	337 7.9	22 28.5	+0.78370	+1.30450	-3.40	-0.5313	
	16	0.0423	0.833	0.838	154 58.5	10 19.9	336 10.2	22 24.7	0.77652	1.30402	3.53	0.5477	
	17	0.0451	0.819	0.828	154 59.6	10 20.0	335 12.3	22 20.8	0.76906	1.30352	3.66	0.5634	
	18	0.0478	0.807	0.818	155 11.2	10 20.7	334 14.4	22 17.0	0.76191	1.30300	3.79	0.5784	
	19	0.0506	0.797	0.808	155 30.9	10 22.1	333 16.3	22 13.1	0.75557	1.30248	3.92	0.5927	
	h (8.0)	20	0.0533	-0.790	-0.799	155 54.3	10 23.6	332 18.1	22 9.2	+0.75037	+1.30194	-4.04	-0.6065
	21	0.0560	0.785	0.789	156 16.4	10 25.1	331 19.8	22 5.3	0.74643	1.30138	4.17	0.6197	
	22	0.0588	0.782	0.779	156 32.0	10 26.1	330 21.3	22 1.4	0.74356	1.30082	4.29	0.6324	
	23	0.0615	0.778	0.770	156 37.8	10 26.5	329 22.6	21 57.5	0.74132	1.30024	4.41	0.6446	
	24	0.0642	0.774	0.760	156 32.3	10 26.2	328 23.8	21 53.6	0.73906	1.29965	4.53	0.6563	
	25	0.0670	-0.767	-0.751	156 16.3	10 25.1	327 24.9	21 49.7	+0.73618	+1.29905	-4.65	-0.6676	
	26	0.0697	0.758	0.742	155 53.0	10 23.5	326 25.8	21 45.7	0.73219	1.29844	4.77	0.6784	
	27	0.0724	0.746	0.732	155 26.9	10 21.8	325 26.6	21 41.8	0.72679	1.29782	4.88	0.6889	
	28	0.0752	0.732	0.723	155 3.1	10 20.2	324 27.2	21 37.8	0.71990	1.29720	5.00	0.6989	
	29	0.0779	0.716	0.714	154 46.3	10 19.1	323 27.6	21 33.8	0.71172	1.29657	5.11	0.7086	
	30	0.0807	-0.701	-0.705	154 40.2	10 18.7	322 27.9	21 29.9	+0.70272	+1.29593	-5.22	-0.7180	
	31	0.0834	0.687	0.697	154 46.4	10 19.1	321 28.0	21 25.9	0.69351	1.29528	5.33	0.7270	
Feb.	1	0.0861	0.675	0.688	155 4.6	10 20.3	320 27.9	21 21.9	0.68482	1.29463	5.44	0.7357	
2	0.0889	0.666	0.679	155 31.0	10 22.1	319 27.7	21 17.8	0.67727	1.29398	5.55	0.7441		
3	0.0916	0.660	0.671	156 0.2	10 24.0	318 27.3	21 13.8	0.67128	1.29332	5.65	0.7522		
h (9.0)	4	0.0944	-0.655	-0.662	156 25.9	10 25.7	317 26.8	21 9.8	+0.66690	+1.29266	-5.75	-0.7601	
5	0.0971	0.652	0.654	156 42.6	10 26.8	316 26.1	21 5.7	0.66382	1.29200	5.85	0.7676		
6	0.0998	0.648	0.646	156 47.4	10 27.2	315 25.2	21 1.7	0.66141	1.29134	5.95	0.7749		
7	0.1026	0.644	0.638	156 39.1	10 26.6	314 24.2	20 57.6	0.65897	1.29067	6.05	0.7819		
8	0.1053	0.638	0.630	156 20.0	10 25.3	313 23.0	20 53.5	0.65586	1.29001	6.15	0.7887		
9	0.1080	-0.630	-0.622	155 54.4	10 23.6	312 21.6	20 49.4	+0.65153	+1.28935	-6.24	-0.7952		
10	0.1107	0.619	0.614	155 28.3	10 21.9	311 20.1	20 45.3	0.64567	1.28869	6.33	0.8015		
11	0.1135	0.607	0.606	155 7.9	10 20.5	310 18.5	20 41.2	0.63834	1.28804	6.42	0.8076		
12	0.1163	0.595	0.599	154 57.9	10 19.9	309 16.7	20 37.1	0.62987	1.28739	6.51	0.8135		
13	0.1190	0.583	0.591	155 2.4	10 20.2	308 14.7	20 33.0	0.62073	1.28674	6.59	0.8191		
14	0.1217	-0.573	-0.583	155 22.1	10 21.5	307 12.5	20 28.8	+0.61180	+1.28610	-6.68	-0.8245		
15	0.1245	-0.565	-0.576	155 54.9	10 23.7	306 10.2	20 24.7	+0.60389	+1.28547	-6.76	-0.8298		

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		f'		G		H		Log g .	Log h .	i	Log i .
		In Time.	In Time.	In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	s	s	s	h m	°	h m	°	h m			"	
Feb. 15	0.1245	-0.565	-0.576	155 54.9	10 23.7	306 10.2	20 24.7	+0.60389	+1.28547	-6.76	-0.8298		
16	0.1272	0.560	0.569	156 35.0	10 26.3	305 7.8	20 20.5	0.59761	1.28485	6.84	0.8348		
17	0.1300	0.557	0.562	157 15.2	10 29.0	304 5.2	20 16.3	0.59318	1.28423	6.91	0.8396		
18	0.1327	0.555	0.555	157 47.5	10 31.2	303 2.4	20 12.2	0.59046	1.28362	6.99	0.8443		
h 19	0.1354	0.554	0.548	158 6.5	10 32.4	301 59.5	20 8.0	0.58888	1.28302	7.06	0.8488		
(10.0) 20	0.1382	-0.553	-0.541	158 9.2	10 32.6	300 56.5	20 3.8	+0.58759	+1.28244	-7.13	-0.8531		
21	0.1409	0.550	0.534	157 55.8	10 31.7	299 53.3	19 59.6	0.58568	1.28186	7.20	0.8571		
22	0.1436	0.544	0.527	157 30.2	10 30.0	298 50.0	19 55.3	0.58236	1.28130	7.26	0.8611		
23	0.1464	0.536	0.521	156 58.5	10 27.9	297 46.5	19 51.1	0.57719	1.28075	7.33	0.8649		
24	0.1491	0.525	0.514	156 27.5	10 25.8	296 42.9	19 46.9	0.56990	1.28021	7.39	0.8685		
25	0.1518	-0.512	-0.508	156 3.9	10 24.3	295 39.2	19 42.6	+0.56075	+1.27969	-7.45	-0.8719		
26	0.1546	0.499	0.501	155 53.8	10 23.6	294 35.3	19 38.4	0.55020	1.27919	7.50	0.8752		
27	0.1573	0.487	0.495	156 0.8	10 24.1	293 31.3	19 34.1	0.53908	1.27870	7.56	0.8783		
28	0.1601	0.477	0.489	156 24.7	10 25.6	292 27.2	19 29.8	0.52844	1.27822	7.61	0.8813		
29	0.1628	0.469	0.482	157 1.8	10 28.1	291 23.0	19 25.5	0.51923	1.27777	7.66	0.8841		
Mar. 1	0.1655	-0.464	-0.476	157 45.1	10 31.0	290 18.7	19 21.2	+0.51218	+1.27733	-7.70	-0.8867		
2	0.1683	0.461	0.470	158 25.1	10 33.7	289 14.3	19 17.0	0.50753	1.27692	7.75	0.8892		
3	0.1710	0.460	0.464	158 52.7	10 35.5	288 9.8	19 12.7	0.50489	1.27652	7.79	0.8916		
4	0.1738	0.459	0.458	159 2.8	10 36.2	287 5.2	19 8.3	0.50349	1.27614	7.83	0.8938		
h 5	0.1765	0.457	0.452	158 53.3	10 35.6	286 0.6	19 4.0	0.50234	1.27578	7.87	0.8959		
(11.0) 6	0.1792	-0.454	-0.446	158 26.7	10 33.8	284 55.9	18 59.7	+0.50044	+1.27544	-7.90	-0.8978		
7	0.1820	0.448	0.440	157 48.3	10 31.2	283 51.1	18 55.4	0.49693	1.27513	7.94	0.8996		
8	0.1847	0.440	0.434	157 6.0	10 28.4	282 46.3	18 51.1	0.49136	1.27484	7.97	0.9012		
9	0.1875	0.431	0.428	156 28.3	10 25.9	281 41.5	18 46.8	0.48365	1.27457	7.99	0.9027		
10	0.1902	0.420	0.423	156 3.3	10 24.2	280 36.5	18 42.5	0.47409	1.27432	8.02	0.9041		
11	0.1929	-0.410	-0.417	155 56.9	10 23.8	279 31.6	18 38.1	+0.46341	+1.27409	-8.04	-0.9053		
12	0.1957	0.400	0.411	156 11.5	10 24.8	278 26.7	18 33.8	0.45269	1.27389	8.06	0.9064		
13	0.1984	0.393	0.406	156 45.6	10 27.0	277 21.7	18 29.4	0.44307	1.27371	8.08	0.9074		
14	0.2011	0.389	0.400	157 32.8	10 30.2	276 16.7	18 25.1	0.43558	1.27356	8.10	0.9082		
15	0.2039	0.387	0.394	158 22.2	10 33.5	275 11.7	18 20.8	0.43080	1.27343	8.11	0.9089		
16	0.2066	-0.387	-0.389	159 2.3	10 36.2	274 6.7	18 16.4	+0.42862	+1.27333	-8.12	-0.9095		
17	0.2094	0.387	0.383	159 23.8	10 37.6	273 1.8	18 12.1	0.42825	1.27325	8.13	0.9099		
18	0.2121	0.388	0.377	159 21.7	10 37.4	271 56.8	18 7.8	0.42864	1.27319	8.13	0.9102		
19	0.2148	0.386	0.372	158 55.3	10 35.7	270 51.9	18 3.5	0.42843	1.27316	8.14	0.9104		
20	0.2176	0.383	0.366	158 8.6	10 32.6	269 47.0	17 59.1	0.42656	1.27315	8.14	0.9104		
h 21	0.2203	-0.376	-0.361	157 9.7	10 28.6	268 42.1	17 54.8	+0.42214	+1.27317	-8.14	-0.9103		
(12.0) 22	0.2230	0.367	0.355	156 7.4	10 24.5	267 37.3	17 50.5	0.41483	1.27321	8.13	0.9101		
23	0.2258	0.356	0.350	155 11.4	10 20.8	266 32.5	17 46.2	0.40463	1.27327	8.12	0.9097		
24	0.2285	0.344	0.344	154 30.1	10 18.0	265 27.7	17 41.8	0.39204	1.27336	8.11	0.9093		
25	0.2312	0.332	0.338	154 10.2	10 16.7	264 23.1	17 37.5	0.37809	1.27348	8.10	0.9087		
26	0.2340	-0.322	-0.332	154 14.2	10 17.0	263 18.5	17 33.2	+0.36410	+1.27362	-8.09	-0.9079		
27	0.2367	0.314	0.327	154 39.2	10 18.6	262 13.9	17 28.9	0.35154	1.27378	8.07	0.9071		
28	0.2395	0.309	0.321	155 16.1	10 21.1	261 9.5	17 24.6	0.34170	1.27396	8.05	0.9061		
29	0.2422	0.306	0.316	155 52.7	10 23.5	260 5.2	17 20.3	0.33521	1.27417	8.03	0.9049		
30	0.2449	0.304	0.310	156 15.0	10 25.1	259 0.9	17 16.1	0.33198	1.27440	8.01	0.9036		
31	0.2477	-0.304	-0.304	156 14.6	10 25.0	257 50.8	17 11.8	+0.33102	+1.27465	-7.98	-0.9022		
Apr. 1	0.2504	-0.302	-0.298	155 44.0	10 22.0	256 52.8	17 7.5	+0.33007	+1.27493	-7.96	-0.9007		

(CONSTANTS OF STRUVE AND PETERS.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		f'		G		H		Log g .	Log h .	i	Log i .
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.						
	y	s	s	°	h m	°	h m					"	
Apr. 													

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		f'		G		H		Log g .	Log h .	i	Log i .
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.						
		s	s	$^{\circ}$	$h\ m$	$^{\circ}$	$h\ m$					$''$	
May	17	0.3764	+0.036	+0.041	79 18.8	5 17.3	210 56.0	14 3.7	+0.14254	+1.30005	-4.45	-0.6483	
	18	0.3791	0.052	0.050	75 17.4	5 1.2	210 0.5	14 0.0	0.15078	1.30060	4.34	0.6370	
	19	0.3818	0.067	0.060	71 21.9	4 45.5	209 5.1	13 56.3	0.15539	1.30114	4.22	0.6252	
	20	0.3846	0.080	0.069	67 44.3	4 30.9	208 9.9	13 52.7	0.15697	1.30167	4.10	0.6129	
h	21	0.3873	0.091	0.079	64 36.0	4 18.4	207 14.8	13 49.0	0.15662	1.30219	3.98	0.6002	
(16.0)	22	0.3900	+0.100	+0.088	62 5.3	4 8.4	206 19.9	13 45.3	+0.15580	+1.30270	-3.86	-0.5869	
	23	0.3928	0.106	0.098	60 15.2	4 1.0	205 25.1	13 41.7	0.15637	1.30319	3.74	0.5732	
	24	0.3955	0.111	0.108	59 1.2	3 56.1	204 30.5	13 38.0	0.16016	1.30367	3.62	0.5588	
	25	0.3983	0.116	0.117	58 14.0	3 52.9	203 36.0	13 34.4	0.16836	1.30414	3.50	0.5438	
	26	0.4010	0.122	0.127	57 37.6	3 50.5	202 41.6	13 30.8	0.18142	1.30459	3.38	0.5282	
	27	0.4037	+0.129	+0.137	56 54.2	3 47.6	201 47.4	13 27.2	+0.19867	+1.30503	-3.25	-0.5119	
	28	0.4065	0.139	0.147	55 51.8	3 43.5	200 53.2	13 23.5	0.21844	1.30546	3.13	0.4948	
	29	0.4092	0.151	0.157	54 25.0	3 37.7	199 59.2	13 19.9	0.23880	1.30587	3.00	0.4769	
	30	0.4120	0.166	0.167	52 33.3	3 30.2	199 5.4	13 16.4	0.25797	1.30626	2.87	0.4581	
	31	0.4147	0.181	0.177	50 22.7	3 21.5	198 11.6	13 12.8	0.27462	1.30664	2.74	0.4384	
June	1	0.4174	+0.196	+0.188	48 1.2	3 12.1	197 17.9	13 9.2	+0.28795	+1.30701	-2.62	-0.4176	
	2	0.4202	0.209	0.198	45 38.3	3 2.6	196 24.4	13 5.6	0.29747	1.30735	2.49	0.3956	
	3	0.4229	0.221	0.208	43 23.8	2 53.6	195 30.9	13 2.1	0.30381	1.30768	2.36	0.3723	
	4	0.4256	0.230	0.219	41 27.2	2 45.8	194 37.5	12 58.5	0.30755	1.30800	2.23	0.3476	
h	5	0.4284	0.237	0.229	39 55.5	2 39.7	193 44.3	12 55.0	0.30989	1.30830	2.10	0.3212	
(17.0)	6	0.4311	+0.242	+0.240	38 53.1	2 35.5	192 51.1	12 51.4	+0.31217	+1.30858	-1.96	-0.2930	
	7	0.4339	0.246	0.250	38 18.0	2 33.2	191 58.0	12 47.9	0.31598	1.30884	1.83	0.2628	
	8	0.4366	0.250	0.261	38 3.8	2 32.3	191 5.0	12 44.3	0.32249	1.30908	1.70	0.2302	
	9	0.4393	0.257	0.271	37 58.7	2 31.9	190 12.1	12 40.8	0.33244	1.30931	1.57	0.1948	
	10	0.4421	0.265	0.282	37 49.5	2 31.3	189 19.2	12 37.3	0.34574	1.30952	1.43	0.1562	
	11	0.4448	+0.277	+0.292	37 25.2	2 29.7	188 26.4	12 33.8	+0.36154	+1.30971	-1.30	-0.1136	
	12	0.4476	0.291	0.303	36 39.1	2 26.6	187 33.6	12 30.2	0.37854	1.30988	1.17	0.0663	
	13	0.4503	0.307	0.314	35 30.3	2 22.0	186 40.8	12 26.7	0.39533	1.31004	1.03	0.0131	
	14	0.4530	0.324	0.324	34 2.1	2 16.1	185 48.2	12 23.2	0.41065	1.31017	0.90	9.9523	
	15	0.4558	0.340	0.335	32 20.9	2 9.4	184 55.6	12 19.7	0.42382	1.31029	0.76	9.8815	
	16	0.4585	+0.356	+0.346	30 34.8	2 2.3	184 3.0	12 16.2	+0.43447	+1.31039	-0.63	-9.7967	
	17	0.4612	0.369	0.357	28 52.6	1 55.5	183 10.5	12 12.7	0.44263	1.31046	0.49	9.6911	
	18	0.4640	0.379	0.367	27 23.2	1 49.5	182 17.9	12 9.2	0.44862	1.31052	0.36	9.5511	
	19	0.4667	0.387	0.378	26 12.5	1 44.8	181 25.4	12 5.7	0.45316	1.31056	0.22	9.3431	
h	20	0.4694	0.394	0.389	25 23.8	1 41.6	180 32.9	12 2.2	0.45731	1.31058	-0.08	-8.9289	
(18.0)	21	0.4722	+0.400	+0.400	24 56.9	1 39.8	179 40.4	11 58.7	+0.46202	+1.31059	+0.05	+8.7040	
	22	0.4749	0.406	0.411	24 47.2	1 39.1	178 47.9	11 55.2	0.46822	1.31057	0.19	9.2696	
	23	0.4777	0.414	0.421	24 46.8	1 39.1	177 55.4	11 51.7	0.47644	1.31054	0.32	9.5071	
	24	0.4804	0.424	0.432	24 46.1	1 39.1	177 2.8	11 48.2	0.48669	1.31048	0.46	9.6597	
	25	0.4831	0.436	0.443	24 36.6	1 38.4	176 10.3	11 44.7	0.49856	1.31041	0.59	9.7723	
	26	0.4859	+0.450	+0.454	24 12.4	1 36.8	175 17.7	11 41.2	+0.51117	+1.31032	+0.73	+9.8615	
	27	0.4886	0.466	0.464	23 31.3	1 34.1	174 25.2	11 37.7	0.52354	1.31020	0.86	9.9354	
	28	0.4914	0.482	0.475	22 34.4	1 30.3	173 32.6	11 34.2	0.53478	1.31007	1.00	9.9984	
	29	0.4941	0.496	0.486	21 26.7	1 25.5	172 39.9	11 30.7	0.54428	1.30992	1.13	0.0533	
	30	0.4968	0.509	0.499	20 13.9	1 20.9	171 47.2	11 27.1	0.55174	1.30976	1.26	0.1019	
July	1	0.4996	+0.520	+0.507	19 3.1	1 16.2	170 54.5	11 23.6	+0.55707	+1.30957	+1.40	+0.1455	
	2	0.5023	+0.527	+0.518	18 1.0	1 12.1	170 1.8	11 20.1	+0.56069	+1.30937	+1.53	+0.1850	

(CONSTANTS OF STRUVE AND PETERS.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		f'		G		H		$\log \alpha$	$\log h$	i	$\log i$
			In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.	In Time.					
		y	s	s	°	h m	°	h m	°	h m			"	
July	1	0.4996	+0.520	+0.507	19 3.1	1 16.2	170 54.5	11 23.6	+0.55707	+1.30957	+1.40	+0.1455		
	2	0.5023	0.527	0.518	18 1.0	1 12.1	170 1.8	11 20.1	0.56069	1.30937	1.53	0.1850		
	3	0.5050	0.533	0.528	17 12.8	1 8.9	169 8.9	11 16.6	0.56319	1.30915	1.66	0.2212		
	4	0.5078	0.537	0.539	16 40.9	1 6.7	168 16.1	11 13.1	0.56546	1.30891	1.80	0.2544		
	h	5	0.5105	0.541	0.549	16 25.3	1 5.7	167 23.2	11 9.5	0.56833	1.30865	1.93	0.2851	
	(19.0)	6	0.5133	+0.547	+0.560	16 22.3	1 5.5	166 30.2	11 6.0	+0.57256	+1.30837	+2.06	+0.3137	
	7	0.5160	0.554	0.570	16 25.7	1 5.7	165 37.2	11 2.5	0.57862	1.30808	2.19	0.3405		
	8	0.5187	0.564	0.581	16 27.7	1 5.8	164 44.0	10 58.9	0.58660	1.30778	2.32	0.3655		
	9	0.5215	0.577	0.591	16 21.5	1 5.4	163 50.8	10 55.4	0.59617	1.30745	2.45	0.3891		
	10	0.5242	0.592	0.601	16 2.1	1 4.1	162 57.6	10 51.8	0.60665	1.30711	2.58	0.4113		
	11	0.5270	+0.609	+0.612	15 28.2	1 1.9	162 4.2	10 48.3	+0.61720	+1.30675	+2.71	+0.4324		
	12	0.5297	0.625	0.622	14 41.2	0 58.7	161 10.8	10 44.7	0.62703	1.30638	2.83	0.4523		
	13	0.5324	0.640	0.632	13 44.7	0 55.0	160 17.2	10 41.1	0.63561	1.30599	2.96	0.4713		
	14	0.5352	0.654	0.642	12 44.3	0 51.0	159 23.5	10 37.6	0.64256	1.30559	3.09	0.4894		
	15	0.5379	0.664	0.652	11 46.0	0 47.1	158 29.8	10 34.0	0.64786	1.30517	3.21	0.5066		
	16	0.5406	+0.672	+0.662	10 55.4	0 43.7	157 35.9	10 30.4	+0.65177	+1.30473	+3.33	+0.5231		
	17	0.5434	0.678	0.672	10 16.6	0 41.1	156 41.9	10 26.8	0.65473	1.30429	3.46	0.5388		
	18	0.5461	0.683	0.682	9 51.8	0 39.5	155 47.8	10 23.2	0.65732	1.30383	3.58	0.5539		
	19	0.5488	0.688	0.692	9 40.6	0 38.7	154 53.6	10 19.6	0.66026	1.30335	3.70	0.5683		
	h	20	0.5516	0.694	0.701	9 39.5	0 38.6	153 59.2	10 15.9	0.66411	1.30287	3.82	0.5822	
	(20.0)	21	0.5543	+0.702	+0.711	9 43.5	0 38.9	153 4.6	10 12.3	+0.66925	+1.30237	+3.94	+0.5956	
22	0.5571	0.713	0.721	9 46.3	0 39.1	152 10.0	10 8.7	0.67573	1.30186	4.06	0.6084			
23	0.5598	0.726	0.730	9 42.3	0 38.8	151 15.2	10 5.0	0.68324	1.30134	4.18	0.6207			
24	0.5625	0.740	0.740	9 27.8	0 37.9	150 20.2	10 1.3	0.69123	1.30080	4.29	0.6326			
25	0.5653	0.754	0.749	9 1.2	0 36.1	149 25.1	9 57.7	0.69907	1.30026	4.41	0.6441			
26	0.5680	+0.768	+0.758	8 23.7	0 33.6	148 29.8	9 54.0	+0.70615	+1.29971	+4.52	+0.6551			
27	0.5708	0.780	0.767	7 38.8	0 30.6	147 34.4	9 50.3	0.71205	1.29915	4.63	0.6658			
28	0.5735	0.789	0.776	6 50.8	0 27.4	146 38.9	9 46.6	0.71653	1.29858	4.74	0.6761			
29	0.5762	0.796	0.785	6 4.9	0 24.3	145 43.1	9 42.9	0.71959	1.29800	4.85	0.6860			
30	0.5790	0.801	0.794	5 25.8	0 21.7	144 47.2	9 39.2	0.72151	1.29741	4.96	0.6956			
31	0.5817	+0.804	+0.803	4 57.0	0 19.8	143 51.2	9 35.4	+0.72270	+1.29682	+5.07	+0.7049			
Aug.	1	0.5844	0.806	0.812	4 40.0	0 18.7	142 55.0	9 31.7	0.72380	1.29622	5.17	0.7138		
	2	0.5872	0.809	0.821	4 34.3	0 18.3	141 58.6	9 27.9	0.72543	1.29561	5.28	0.7225		
	3	0.5899	0.814	0.820	4 36.8	0 18.5	141 2.0	9 24.1	0.72808	1.29500	5.38	0.7308		
	4	0.5927	0.821	0.838	4 42.7	0 18.8	140 5.3	9 20.4	0.73210	1.29439	5.48	0.7389		
	h	5	0.5954	+0.832	+0.846	4 46.5	0 19.1	139 8.4	+0.73748	+1.29377	+5.58	+0.7468		
	(21.0)	6	0.5981	0.844	0.855	4 43.6	0 18.9	138 11.3	0.74392	1.29315	5.68	0.7543		
	7	0.6009	0.858	0.863	4 30.9	0 18.1	137 14.1	9 8.9	0.75093	1.29252	5.78	0.7617		
	8	0.6036	0.873	0.871	4 7.0	0 16.5	136 16.6	9 5.1	0.75794	1.29190	5.87	0.7688		
	9	0.6064	0.886	0.880	3 35.0	0 14.3	135 19.0	9 1.3	0.76435	1.29127	5.97	0.7756		
	10	0.6091	+0.898	+0.887	2 56.4	0 11.8	134 21.2	8 57.4	+0.76977	+1.29064	+6.06	+0.7822		
	11	0.6118	0.907	0.896	2 15.9	0 9.1	133 23.3	8 53.6	0.77401	1.29002	6.15	0.7887		
	12	0.6146	0.914	0.903	1 38.3	0 6.6	132 25.1	8 49.7	0.77699	1.28939	6.24	0.7949		
	13	0.6173	0.918	0.911	1 7.2	0 4.5	131 26.7	8 45.8	0.77897	1.28876	6.32	0.8009		
	14	0.6200	0.921	0.919	0 45.9	0 3.1	130 28.2	8 41.9	0.78039	1.28814	6.41	0.8067		
	15	0.6228	+0.924	+0.926	0 35.4	0 2.4	129 29.4	8 38.0	+0.78166	+1.28752	+6.49	+0.8123		
	16	0.6255	+0.928	+0.934	0 34.4	0 2.3	128 30.5	8 34.0	+0.78335	+1.28691	+6.57	+0.8177		

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f	f'	G		H		Log g .	Log h .	i	Log i .	
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.					
	y	s	s	$^{\circ}$	h m	$^{\circ}$	h m			"		
Aug.	16	0.6255	+0.928	+0.934	0 34.4	0 2.3	128 30.5	8 34.0	+0.78335	+1.28691	+6.57	+0.8177
	17	0.6282	0.933	0.941	0 40.0	0 2.7	127 31.3	8 30.1	0.78582	1.28630	6.65	0.8229
	18	0.6310	0.941	0.949	0 47.9	0 3.2	126 32.0	8 26.2	0.78933	1.28569	6.73	0.8280
	19	0.6337	0.950	0.956	0 53.3	0 3.6	125 32.5	8 22.2	0.79383	1.28509	6.81	0.8328
	20	0.6365	0.962	0.963	0 52.2	0 3.5	124 32.8	8 18.2	0.79904	1.28450	6.88	0.8375
h (22.0)	21	0.6392	+0.974	+0.970	0 42.1	0 2.8	123 32.9	8 14.2	+0.80452	+1.28391	+6.95	+0.8421
	22	0.6419	0.986	0.977	0 22.6	0 1.5	122 32.8	8 10.2	0.80977	1.28334	7.02	0.8464
	23	0.6447	0.996	0.984	359 55.2	23 59.7	121 32.5	8 6.2	0.81432	1.28277	7.09	0.8506
	24	0.6474	1.005	0.991	359 23.1	23 57.5	120 32.0	8 2.1	0.81788	1.28221	7.16	0.8547
	25	0.6502	1.010	0.998	358 50.0	23 55.3	119 31.4	7 58.1	0.82029	1.28166	7.22	0.8585
	26	0.6529	+1.013	+1.005	358 20.2	23 53.3	118 30.6	7 54.0	+0.82163	+1.28113	+7.28	+0.8623
	27	0.6556	1.014	1.012	357 57.2	23 51.8	117 29.6	7 50.0	0.82220	1.28060	7.34	0.8658
	28	0.6584	1.014	1.018	357 43.3	23 50.9	116 28.4	7 45.9	0.82234	1.28009	7.40	0.8693
	29	0.6611	1.015	1.025	357 39.0	23 50.6	115 27.0	7 41.8	0.82260	1.27959	7.46	0.8725
	30	0.6638	1.017	1.031	357 43.1	23 50.9	114 25.5	7 37.7	0.82345	1.27911	7.51	0.8757
	31	0.6666	+1.022	+1.038	357 52.5	23 51.5	113 23.9	7 33.6	+0.82532	+1.27864	+7.56	+0.8787
Sept.	1	0.6693	1.029	1.044	358 3.1	23 52.2	112 22.0	7 29.5	0.82829	1.27819	7.61	0.8815
	2	0.6721	1.038	1.051	358 10.5	23 52.7	111 20.0	7 25.3	0.83235	1.27775	7.66	0.8842
	3	0.6748	1.050	1.057	358 11.2	23 52.8	110 17.9	7 21.2	0.83714	1.27733	7.71	0.8868
h (23.0)	4	0.6775	1.062	1.063	358 3.4	23 52.2	109 15.7	7 17.0	0.84224	1.27692	7.75	0.8892
	5	0.6803	+1.074	+1.069	357 47.3	23 51.2	108 13.2	7 12.9	+0.84720	+1.27654	+7.79	+0.8915
	6	0.6830	1.085	1.075	357 24.6	23 49.6	107 10.7	7 8.7	0.85153	1.27617	7.83	0.8936
	7	0.6858	1.093	1.082	356 58.2	23 47.9	106 8.0	7 4.5	0.85495	1.27582	7.87	0.8956
	8	0.6885	1.099	1.088	356 32.1	23 46.1	105 5.2	7 0.3	0.85737	1.27549	7.90	0.8975
	9	0.6912	1.102	1.094	356 10.1	23 44.7	104 2.3	6 56.2	0.85885	1.27518	7.93	0.8993
	10	0.6940	+1.103	+1.099	355 55.2	23 43.7	102 59.2	6 52.0	+0.85962	+1.27489	+7.96	+0.9009
	11	0.6967	1.105	1.105	355 48.9	23 43.3	101 56.1	6 47.7	0.86011	1.27462	7.99	0.9024
	12	0.6994	1.106	1.111	355 51.4	23 43.4	100 52.8	6 43.5	0.86072	1.27438	8.02	0.9038
	13	0.7022	1.109	1.117	356 0.9	23 44.1	99 49.4	6 39.3	0.86186	1.27415	8.04	0.9050
	14	0.7049	1.115	1.123	356 14.3	23 45.0	98 45.9	6 35.1	0.86382	1.27395	8.06	0.9061
	15	0.7076	+1.122	+1.129	356 27.6	23 45.8	97 42.4	6 30.8	+0.86670	+1.27377	+8.08	+0.9071
	16	0.7104	1.132	1.135	356 36.9	23 46.5	96 38.7	6 26.6	0.87035	1.27361	8.09	0.9080
	17	0.7131	1.143	1.141	356 39.3	23 46.6	95 35.0	6 22.3	0.87445	1.27347	8.11	0.9087
	18	0.7159	1.154	1.146	356 33.7	23 46.2	94 31.1	6 18.1	0.87859	1.27336	8.12	0.9093
h (0.0)	19	0.7186	1.164	1.152	356 20.6	23 45.4	93 27.2	6 13.8	0.88237	1.27327	8.13	0.9098
	20	0.7213	+1.171	+1.158	356 2.0	23 44.1	92 23.3	6 9.6	+0.88544	+1.27321	+8.13	+0.9101
	21	0.7241	1.177	1.164	355 40.9	23 42.7	91 19.3	6 5.3	0.88755	1.27317	8.14	0.9103
	22	0.7268	1.179	1.169	355 21.1	23 41.4	90 15.2	6 1.0	0.88873	1.27315	8.14	0.9104
	23	0.7296	1.180	1.175	355 5.8	23 40.4	89 11.1	5 56.7	0.88910	1.27316	8.14	0.9104
	24	0.7323	1.179	1.181	354 57.8	23 39.8	88 7.0	5 52.5	0.88898	1.27319	8.14	0.9102
	25	0.7350	+1.179	+1.187	354 58.3	23 39.9	87 2.8	5 48.2	+0.88879	+1.27324	+8.13	+0.9099
	26	0.7378	1.179	1.192	355 6.7	23 40.4	85 58.7	5 43.9	0.88895	1.27332	8.12	0.9095
	27	0.7405	1.182	1.198	355 20.9	23 41.4	84 54.5	5 39.6	0.88985	1.27342	8.11	0.9090
	28	0.7432	1.188	1.204	355 37.8	23 42.5	83 50.3	5 35.4	0.89175	1.27355	8.10	0.9083
	29	0.7460	1.196	1.210	355 53.4	23 43.6	82 46.1	5 31.1	0.89466	1.27370	8.08	0.9075
	30	0.7487	+1.207	+1.216	356 4.3	23 44.3	81 42.0	5 26.8	+0.89839	+1.27387	+8.07	+0.9066
Oct.	1	0.7515	+1.219	+1.222	356 8.4	23 44.6	80 37.8	5 22.5	+0.90259	+1.27406	+8.05	+0.9055

INDEPENDENT STAR-NUMBERS, 1908.

301

(CONSTANTS OF STRUVE AND PETERS.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		f'		G		H		Log g .	Log h .	i	Log i .	
			In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.							
		y	s	s	$^{\circ}$	h m	$^{\circ}$	h m	$^{\circ}$	h m					
Oct.	1	0.7515	+1.219	+1.222	356	8.423 44.6	80	37.8	5	22.5	+0.90259	+1.27406	+8.05	+0.9055	
	2	0.7542	1.231	1.228	356	4.823 44.3	79	33.7	5	18.2	0.90683	1.27428	8.03	0.9043	
	3	0.7569	1.242	1.234	355	54.523 43.6	78	29.7	5	14.0	0.91071	1.27452	8.00	0.9030	
	4	0.7597	1.250	1.240	355	40.123 42.7	77	25.7	5	9.7	0.91392	1.27478	7.97	0.9015	
	h	5	0.7624	1.257	1.246	355	24.523 41.6	76	21.7	5	5.4	0.91630	1.27507	7.94	0.8999
	(1.0)	6	0.7652	+1.261	+1.252	355	11.123 40.7	75	17.7	5	1.2	+0.91783	+1.27538	+7.91	+0.8982
	7	0.7679	1.263	1.258	355	3.023 40.2	74	13.9	4	56.9	0.91866	1.27570	7.88	0.8963	
	8	0.7706	1.264	1.264	355	2.023 40.1	73	10.1	4	52.7	0.91912	1.27605	7.84	0.8943	
	9	0.7734	1.266	1.270	355	9.023 40.6	72	6.4	4	48.4	0.91961	1.27642	7.80	0.8922	
	10	0.7761	1.269	1.276	355	22.723 41.5	71	2.7	4	44.2	0.92048	1.27681	7.76	0.8899	
	11	0.7788	+1.274	+1.283	355	40.823 42.7	69	59.1	4	40.0	+0.92204	+1.27722	+7.72	+0.8874	
	12	0.7816	1.281	1.289	355	59.823 44.0	68	55.6	4	35.7	0.92442	1.27764	7.67	0.8849	
	13	0.7843	1.291	1.295	356	16.523 45.1	67	52.2	4	31.5	0.92754	1.27808	7.63	0.8821	
	14	0.7870	1.302	1.302	356	27.623 45.8	66	48.9	4	27.3	0.93124	1.27855	7.58	0.8793	
	15	0.7898	1.314	1.308	356	31.823 46.1	65	45.7	4	23.0	0.93512	1.27903	7.52	0.8762	
	16	0.7925	+1.326	+1.315	356	28.923 45.9	64	42.6	4	18.8	+0.93883	+1.27952	+7.47	+0.8730	
	17	0.7953	1.335	1.322	356	20.323 45.4	63	39.6	4	14.6	0.94198	1.28003	7.41	0.8697	
	18	0.7980	1.342	1.328	356	8.523 44.6	62	36.7	4	10.4	0.94438	1.28055	7.35	0.8662	
	19	0.8007	1.346	1.335	355	56.723 43.8	61	33.9	4	6.3	0.94594	1.28109	7.29	0.8625	
	h	20	0.8035	1.349	1.342	355	47.923 43.2	60	31.2	4	2.1	0.94677	1.28164	7.22	0.8587
	(2.0)	21	0.8062	+1.350	+1.349	355	44.823 43.0	59	28.7	3	57.9	+0.94708	+1.28221	+7.16	+0.8547
	22	0.8090	1.350	1.356	355	48.823 43.4	58	26.2	3	53.7	0.94723	1.28278	7.09	0.8505	
	23	0.8117	1.352	1.363	355	59.923 44.0	57	23.9	3	49.6	0.94764	1.28337	7.02	0.8462	
	24	0.8144	1.356	1.371	356	16.723 45.1	56	21.8	3	45.4	0.94862	1.28397	6.95	0.8417	
	25	0.8172	1.362	1.378	356	36.523 46.4	55	19.8	3	41.3	0.95043	1.28457	6.87	0.8370	
	26	0.8199	+1.371	+1.385	356	56.023 47.7	54	17.9	3	37.2	+0.95316	+1.28519	+6.79	+0.8321	
	27	0.8226	1.382	1.393	357	11.823 48.8	53	16.2	3	33.1	0.95672	1.28581	6.72	0.8270	
	28	0.8254	1.396	1.400	357	21.923 49.5	52	14.6	3	29.0	0.96078	1.28644	6.63	0.8217	
	29	0.8281	1.409	1.408	357	25.023 49.7	51	13.1	3	24.9	0.96501	1.28708	6.55	0.8162	
	30	0.8309	1.422	1.416	357	21.923 49.5	50	11.9	3	20.8	0.96904	1.28772	6.47	0.8105	
31	0.8336	+1.434	+1.424	357	14.023 48.9	49	10.7	3	16.7	+0.97257	+1.28837	+6.38	+0.8046		
Nov.	1	0.8363	1.443	1.432	357	4.223 48.3	48	9.8	3	12.7	0.97539	1.28902	6.29	0.7985	
2	0.8391	1.450	1.440	356	55.823 47.7	47	9.0	3	8.6	0.97747	1.28967	6.20	0.7921		
3	0.8418	1.454	1.448	356	50.423 47.4	46	8.3	3	4.6	0.97893	1.29032	6.10	0.7855		
h	4	0.8446	1.458	1.456	356	51.223 47.4	45	7.8	3	0.5	0.98003	1.29098	6.01	0.7787	
(3.0)	5	0.8473	+1.462	+1.464	356	58.623 47.9	44	7.5	2	56.5	+0.98105	+1.29164	+5.91	+0.7717	
6	0.8500	1.466	1.473	357	12.023 48.8	43	7.3	2	52.5	0.98234	1.29230	5.81	0.7643		
7	0.8528	1.473	1.482	357	29.623 50.0	42	7.2	2	48.5	0.98419	1.29295	5.71	0.7567		
8	0.8555	1.482	1.490	357	48.723 51.2	41	7.3	2	44.5	0.98677	1.29360	5.61	0.7489		
9	0.8582	1.494	1.499	358	6.123 52.4	40	7.6	2	40.5	0.99004	1.29425	5.51	0.7407		
10	0.8610	+1.507	+1.508	358	19.123 53.3	39	8.0	2	36.5	+0.99383	+1.29489	+5.40	+0.7323		
11	0.8637	1.521	1.517	358	26.223 53.7	38	8.6	2	32.6	0.99788	1.29554	5.29	0.7235		
12	0.8664	1.535	1.526	358	26.723 53.8	37	9.3	2	28.6	1.00185	1.29617	5.18	0.7145		
13	0.8692	1.548	1.535	358	21.723 53.4	36	10.2	2	24.7	1.00541	1.29680	5.07	0.7051		
14	0.8719	1.558	1.544	358	13.223 52.9	35	11.2	2	20.7	1.00835	1.29743	4.96	0.6953		
15	0.8747	+1.566	+1.554	358	3.623 52.2	34	12.3	2	16.8	+1.01058	+1.29805	+4.84	+0.6852		
16	0.8774	+1.572	+1.563	357	56.023 51.7	33	13.5	2	12.9	+1.01215	+1.29866	+4.73	+0.6747		

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		f'		G		H		Log g .	Log h .	i	Log i .
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.						
		y	s	s	o	h	m	o	h	m			
Nov. 16	0.8774	+1.572	+1.563	357 56.0	23 51.7	33 13.5	2 12.9	+1.01215	+1.29866	+4.73	+0.6747		
17	0.8801	1.576	1.573	357 52.5	23 51.5	32 14.9	2 9.0	1.01321	1.29926	4.61	0.6638		
18	0.8829	1.579	1.582	357 54.6	23 51.6	31 16.5	2 5.1	1.01405	1.29985	4.49	0.6524		
h 19	0.8856	1.582	1.592	358 2.8	23 52.2	30 18.1	2 1.2	1.01500	1.30043	4.37	0.6406		
(4.0) 20	0.8884	1.588	1.602	358 16.0	23 53.1	29 19.9	1 57.3	1.01640	1.30100	4.25	0.6284		
21	0.8911	+1.596	+1.612	358 32.2	23 54.1	28 21.8	1 53.5	+1.01849	+1.30156	+4.13	+0.6156		
22	0.8938	1.606	1.622	358 48.5	23 55.2	27 23.9	1 49.6	1.02136	1.30210	4.00	0.6023		
23	0.8966	1.619	1.632	359 2.2	23 56.1	26 26.0	1 45.7	1.02492	1.30264	3.87	0.5884		
24	0.8993	1.635	1.642	359 11.2	23 56.7	25 28.3	1 41.9	1.02897	1.30316	3.75	0.5740		
25	0.9020	1.651	1.652	359 14.1	23 56.9	24 30.7	1 38.1	1.03325	1.30367	3.62	0.5589		
26	0.9048	+1.667	+1.662	359 11.2	23 56.7	23 33.2	1 34.2	+1.03743	+1.30416	+3.49	+0.5431		
27	0.9075	1.681	1.673	359 3.8	23 56.3	22 35.8	1 30.4	1.04121	1.30464	3.36	0.5265		
28	0.9102	1.694	1.683	358 53.8	23 55.6	21 38.6	1 26.6	1.04444	1.30510	3.23	0.5092		
29	0.9130	1.704	1.694	358 43.7	23 54.9	20 41.4	1 22.8	1.04702	1.30555	3.10	0.4910		
30	0.9157	1.712	1.704	358 36.3	23 54.4	19 44.3	1 19.0	1.04909	1.30598	2.96	0.4718		
Dec. 1	0.9185	+1.718	+1.715	358 33.2	23 54.2	18 47.3	1 15.1	+1.05064	+1.30639	+2.83	+0.4516		
2	0.9212	1.724	1.726	358 35.5	23 54.4	17 50.5	1 11.4	1.05214	1.30679	2.69	0.4303		
3	0.9239	1.731	1.737	358 43.0	23 54.9	16 53.7	1 7.6	1.05377	1.30717	2.55	0.4078		
h 4	0.9267	1.739	1.748	358 54.3	23 55.6	15 57.0	1 3.8	1.05582	1.30753	2.42	0.3838		
(5.0) 5	0.9294	1.750	1.759	359 7.5	23 56.5	15 0.4	1 0.0	1.05843	1.30787	2.28	0.3583		
6	0.9322	+1.763	+1.770	359 19.8	23 57.3	14 3.8	0 56.3	+1.06163	+1.30819	+2.14	+0.3311		
7	0.9349	1.778	1.781	359 28.8	23 57.9	13 7.3	0 52.5	1.06532	1.30849	2.00	0.3019		
8	0.9376	1.794	1.792	359 33.0	23 58.2	12 10.9	0 48.7	1.06926	1.30878	1.86	0.2704		
9	0.9404	1.811	1.803	359 31.6	23 58.1	11 14.6	0 45.0	1.07320	1.30904	1.72	0.2363		
10	0.9431	1.826	1.814	359 25.0	23 57.7	10 18.2	0 41.2	1.07684	1.30928	1.58	0.1991		
11	0.9458	+1.839	+1.825	359 14.8	23 57.0	9 22.0	0 37.5	+1.07999	+1.30951	+1.43	+0.1583		
12	0.9486	1.850	1.836	359 3.0	23 56.2	8 25.8	0 33.7	1.08253	1.30971	1.29	0.1131		
13	0.9513	1.858	1.848	358 52.0	23 55.5	7 29.6	0 30.0	1.08445	1.30990	1.15	0.0625		
14	0.9541	1.864	1.859	358 44.0	23 54.9	6 33.4	0 26.2	1.08589	1.31006	1.01	0.0050		
15	0.9568	1.869	1.870	358 40.4	23 54.7	5 37.3	0 22.5	1.08704	1.31020	0.86	9.9385		
16	0.9595	+1.874	+1.882	358 41.8	23 54.8	4 41.1	0 18.7	+1.08818	+1.31032	+0.72	+9.8598		
17	0.9623	1.880	1.893	358 47.6	23 55.2	3 45.0	0 15.0	1.08961	1.31041	0.58	9.7634		
18	0.9650	1.889	1.904	358 56.4	23 55.8	2 48.9	0 11.3	1.09153	1.31049	0.43	9.6391		
19	0.9678	1.900	1.916	359 6.1	23 56.4	1 52.8	0 7.5	1.09405	1.31054	0.29	9.4640		
h 20	0.9705	1.914	1.927	359 14.2	23 56.9	0 56.8	0 3.8	1.09722	1.31058	+0.14	9.1656		
(6.0) 21	0.9732	+1.930	+1.939	359 18.8	23 57.3	0 0.7	0 0.0	+1.10083	+1.31059	0.00	+7.2355		
22	0.9760	1.947	1.950	359 18.5	23 57.2	359 4.6	23 56.3	1.10470	1.31058	-0.14	-9.1554		
23	0.9787	1.965	1.962	359 13.1	23 56.9	358 8.5	23 52.6	1.10854	1.31055	0.28	9.4589		
24	0.9814	1.981	1.973	359 3.4	23 56.2	357 12.3	23 48.8	1.11211	1.31049	0.43	9.6358		
25	0.9842	1.995	1.984	358 51.0	23 55.4	356 16.2	23 45.1	1.11522	1.31042	0.57	9.7610		
26	0.9869	+2.006	+1.996	358 37.8	23 54.5	355 20.0	23 41.3	+1.11778	+1.31032	-0.72	-9.8580		
27	0.9896	2.016	2.007	358 26.1	23 53.7	354 23.8	23 37.6	1.11981	1.31020	0.86	9.9371		
28	0.9924	2.023	2.018	358 17.6	23 53.2	353 27.6	23 33.8	1.12143	1.31006	1.01	0.0039		
29	0.9951	2.030	2.030	358 13.6	23 52.9	352 31.3	23 30.1	1.12284	1.30990	1.15	0.0616		
30	0.9979	2.036	2.041	358 14.1	23 52.9	351 35.0	23 26.3	1.12431	1.30972	1.29	0.1125		
31	1.0006	+2.045	+2.052	358 18.3	23 53.2	350 38.6	23 22.6	+1.12602	+1.30951	-1.43	-0.1578		
32	1.0033	+2.055	+2.064	358 24.8	23 53.7	349 42.2	23 18.8	+1.12817	+1.30929	-1.58	-0.1983		

BESSELIAN AND INDEPENDENT STAR-NUMBERS, 1908. 303

(CONSTANTS OF STRUVE AND PETERS.)

FOR WASHINGTON SIDEREAL TWELVE HOURS.										
Mean Solar Date.	Log <i>A'</i> .	Log <i>B'</i> .	Log <i>C</i> .	Log <i>D</i> .	<i>f'</i>	<i>G'</i>	<i>H</i>	Log <i>g'</i> .	Log <i>h</i> .	Log <i>i</i> .
Jan. 0.72	-9.5134	+0.4399	-0.4969	+1.3044	-1.005	157 10	351 9	+0.8520	+1.3096	-0.1342
10.70	9.4643	0.4106	0.8031	1.2841	0.898	156 13	341 43	0.8050	1.3066	0.4403
20.67	9.4124	0.3695	0.9716	1.2483	0.797	155 41	332 8	0.7549	1.3018	0.6089
30.64	9.3585	0.3169	1.0821	1.1942	0.704	155 37	322 19	0.7012	1.2958	0.7194
Feb. 9.61	9.3037	0.2544	1.1587	1.1168	0.621	156 0	312 14	0.6451	1.2893	0.7960
19.59	-9.2486	+0.1849	-1.2119	+1.0059	-0.547	156 42	301 54	+0.5877	+1.2830	-0.8492
29.56	9.1930	0.1138	1.2469	0.8382	0.482	157 26	291 19	0.5297	1.2778	0.8842
Mar. 10.53	9.1354	0.0493	1.2668	+0.5378	0.423	157 45	280 34	0.4712	1.2743	0.9041
20.50	9.0728	0.0013	1.2731	-8.8774	0.366	157 4	269 46	0.4107	1.2731	0.9104
30.48	8.9995	9.9782	1.2664	0.5537	0.309	154 36	259 2	0.3458	1.2744	0.9037
Apr. 9.45	-8.9058	+9.9818	-1.2464	-0.8424	-0.250	149 17	248 28	+0.2736	+1.2778	-0.8837
19.42	8.7730	0.0065	1.2122	1.0049	0.186	139 31	238 11	0.1941	1.2829	0.8495
29.40	8.5519	0.0425	1.1614	1.1128	0.113	122 56	228 12	0.1187	1.2890	0.7987
May 9.37	-7.9652	0.0798	1.0900	1.1884	-0.031	98 45	218 34	0.0849	1.2953	0.7273
19.34	+8.2997	0.1112	0.9897	1.2419	+0.058	72 48	209 14	0.1310	1.3011	0.6270
29.31	+8.7123	+0.1313	-0.8429	-1.2784	+0.155	52 37	200 9	+0.2312	+1.3058	-0.4802
June 8.29	8.9298	0.1368	0.5999	1.3006	0.258	38 47	191 16	0.3401	1.3090	0.2372
18.26	9.0782	0.1247	-9.9508	1.3101	0.364	29 2	182 30	0.4387	1.3105	-9.5881
28.23	9.1893	0.0917	+0.3454	1.3075	0.472	21 43	173 46	0.5234	1.3101	+9.9827
July 8.20	9.2762	0.0332	0.7211	1.2927	0.578	15 54	165 0	0.5953	1.3079	0.3584
18.18	+9.3459	+9.9412	+0.9119	-1.2649	+0.679	11 7	156 5	+0.6562	+1.3040	+0.5492
28.15	9.4023	9.7991	1.0352	1.2222	0.773	7 5	146 58	0.7078	1.2988	0.6725
Aug. 7.12	9.4483	9.5634	1.1216	1.1610	0.860	3 43	137 36	0.7514	1.2928	0.7589
17.10	9.4861	+9.0056	1.1835	1.0751	0.938	0 57	127 55	0.7883	1.2865	0.8208
27.07	9.5174	-9.1578	1.2270	0.9514	1.009	358 45	117 56	0.8197	1.2808	0.8643
Sept. 6.04	+9.5440	-9.5458	+1.2554	-0.7582	+1.072	357 8	107 39	+0.8467	+1.2763	+0.8927
16.01	9.5674	9.7049	1.2703	-0.3691	1.132	356 5	97 9	0.8705	1.2737	0.9076
25.99	9.5889	9.7792	1.2725	+0.0558	1.189	355 35	86 32	0.8924	1.2733	0.9098
Oct. 5.96	9.6098	9.8011	1.2618	0.6628	1.248	355 34	75 52	0.9133	1.2752	0.8991
15.93	9.6312	9.7823	1.2375	0.9002	1.311	355 58	65 18	0.9344	1.2792	0.8748
25.90	+9.6536	-9.7263	+1.1977	+1.0443	+1.381	356 39	54 55	+0.9565	+1.2848	+0.8350
Nov. 4.88	9.6776	9.6351	1.1388	1.1426	1.459	357 25	44 45	0.9802	1.2912	0.7761
14.85	9.7030	9.5115	1.0545	1.2119	1.547	358 10	34 50	1.0054	1.2976	0.6918
24.82	9.7295	9.3718	0.9318	1.2600	1.645	358 45	25 10	1.0317	1.3033	0.5691
Dec. 4.79	9.7564	9.2681	0.7391	1.2912	1.751	359 4	15 40	1.0586	1.3076	0.3764
14.77	+9.7831	-9.2822	+0.3506	+1.3075	+1.862	359 6	6 18	+1.0853	+1.3101	+9.9879
24.74	9.8088	9.4219	-0.0322	1.3099	1.976	358 50	356 59	1.1111	1.3105	-9.6695
34.71	+9.8329	-9.6078	-0.6400	+1.2985	+2.088	358 18	347 37	+1.1352	+1.3087	-0.2773

$$E = -0.003$$

The above numbers give the same reductions from mean to apparent place as are employed in computing the apparent places of the fixed stars, given on pages 324-399, from the mean places, given on pages 304-311. In order to render exact interpolation possible through intervals of ten days, all short-period terms have been omitted.

MEAN PLACES FOR 1908.0. (January 1^d.037, Washington.)

Name of Star.	Magni- tude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s		°	'	"	
33 Piscium	4.7	0	0	37.612	+ 3.0715	- 6	13	19.99	+ 20.137
<i>a</i> Andromedæ	2.1	0	3	37.782	3.0947	+ 28	34	57.07	19.881
<i>β</i> Cassiopeïæ	2.4	0	4	15.774	3.1812	+ 58	38	32.52	19.862
22 Andromedæ	4.9	0	5	32.138	3.1074	+ 45	33	37.13	20.036
<i>γ</i> Pegasi (<i>Algenib</i>)	2.8	0	8	29.817	3.0857	+ 14	40	19.66	20.022
<i>α</i> Andromedæ	4.4	0	13	31.108	+ 3.1259	+ 36	16	30.67	+ 19.964
<i>ι</i> Ceti	3.6	0	14	44.446	3.0571	- 9	20	1.94	19.975
44 Piscium	5.8	0	20	41.168	3.0741	+ 1	25	48.74	19.941
<i>β</i> Hydri	2.8	0	20	55.791	3.2102	- 77	46	20.60	20.281
12 Ceti	6.0	0	25	20.636	3.0621	- 4	27	55.94	19.923
<i>π</i> Andromedæ	4.4	0	31	57.845	+ 3.1960	+ 33	12	46.82	+ 19.852
<i>α</i> Cassiopeïæ (<i>var.</i>)	2.3	0	35	16.803	3.3830	+ 56	1	58.45	19.777
<i>β</i> Ceti	2.2	0	38	58.330	3.0128	- 18	29	29.00	19.799
21 Cassiopeïæ	5.7	0	39	33.393	3.8943	+ 74	29	7.19	19.722
<i>α</i> Cassiopeïæ	4.7	0	39	35.643	3.3285	+ 47	46	51.65	19.741
<i>δ</i> Piscium	4.8	0	43	54.482	+ 3.1096	+ 7	5	4.30	+ 19.635
<i>γ</i> Cassiopeïæ	2.3	0	51	8.866	3.5929	+ 60	13	7.39	19.543
<i>μ</i> Andromedæ	4.0	0	51	38.577	3.3190	+ 38	0	1.72	19.569
43 Cephei (H.)	4.6	0	56	1.076	7.5110	+ 85	45	50.40	19.446
<i>ε</i> Piscium	4.3	0	58	10.031	3.1106	+ 7	23	41.92	19.430
<i>β</i> Andromedæ	2.2	1	4	34.612	+ 3.3488	+ 35	7	58.66	+ 19.139
<i>κ</i> Tucanæ	4.9	1	12	38.949	2.0408	- 69	21	53.45	19.136
<i>γ</i> Piscium	5.1	1	13	3.156	3.0921	+ 3	7	48.61	19.011
<i>θ</i> Ceti	3.6	1	19	25.465	2.9977	- 8	39	28.38	18.640
38 Cassiopeïæ	5.9	1	24	22.107	4.4053	+ 69	47	29.35	18.631
<i>α</i> Ursæ Minoris (<i>Polaris</i>)	2.2	1	26	1.61*	+ 26.9120	+ 88	48	56.29	+ 18.653
<i>η</i> Piscium	3.7	1	26	33.486	3.2048	+ 14	52	18.46	18.631
<i>υ</i> Andromedæ	4.2	1	31	23.565	3.5074	+ 40	56	44.09	18.097
<i>π</i> Piscium	5.5	1	32	13.164	3.1757	+ 11	40	16.10	18.480
<i>α</i> Eridani (<i>Achernar</i>)	0.4	1	34	17.322	2.2373	- 57	42	14.60	18.333
<i>ν</i> Piscium	4.6	1	36	38.542	+ 3.1191	+ 5	1	20.39	+ 18.293
<i>α</i> Piscium	4.4	1	40	32.034	3.1642	+ 8	41	41.80	18.193
<i>ξ</i> Ceti	3.6	1	46	55.143	2.9599	- 10	47	21.24	17.877
<i>β</i> Arietis	2.8	1	49	33.286	3.3070	+ 20	21	30.94	17.688
50 Cassiopeïæ	4.1	1	55	33.520	5.0476	+ 71	58	35.51	17.571
<i>γ</i> Andromedæ	2.2	1	58	14.831	+ 3.6685	+ 41	53	19.10	+ 17.386
<i>α</i> Arietis	2.1	2	1	59.049	3.3747	+ 23	1	39.94	17.129
<i>β</i> Trianguli	3.1	2	4	3.919	3.5593	+ 34	33	8.87	17.136
<i>ξ</i> Ceti	4.5	2	8	7.320	3.1761	+ 8	24	55.39	16.978
<i>γ</i> Trianguli	4.3	2	11	50.471	3.5563	+ 33	25	19.43	16.768
67 Ceti	5.6	2	12	23.618	+ 2.9903	- 6	50	45.08	+ 16.683
<i>δ</i> Hydri	4.2	2	20	6.498	1.0563	- 69	4	40.36	16.435
<i>ι</i> Cassiopeïæ	4.6	2	21	28.413	4.8936	+ 66	59	21.46	16.357
<i>ξ</i> Ceti	4.5	2	23	15.942	+ 3.1856	+ 8	2	53.07	16.248
<i>μ</i> Hydri	5.3	2	33	35.935	- 1.3683	- 79	30	39.21	15.672
<i>δ</i> Ceti	4.1	2	34	45.951	+ 3.0726	- 0	4	4.49	+ 15.651
<i>θ</i> Persei	4.2	2	37	54.622	4.0797	+ 48	50	23.44	15.386
<i>γ</i> Ceti	3.6	2	38	31.925	+ 3.1053	+ 2	50	54.49	+ 15.288

MEAN PLACES FOR 1908.0. (January 1^d.037, Washington.)

Name of Star.	Magni- tude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s	s	°	'	"	"
α Arietis	5.5	2	46	24.659	+ 3.3070	+ 14	42	11.84	+ 14.956
47 Cephei (H.)	5.7	2	53	49.079	7.8158	+ 79	3	21.79	14.562
ϵ Arietis	4.6	2	53	56.911	3.4241	+ 20	58	22.00	14.534
α Ceti	2.6	2	57	28.126	3.1325	+ 3	43	45.16	14.252
β Persei (<i>Algol</i>) (<i>var.</i>)	2.3	3	2	10.691	3.8909	+ 40	36	6.25	14.038
48 Cephei (H.)	5.5	3	8	36.937	+ 7.4756	+ 77	23	51.55	+ 13.577
ζ Arietis	4.8	3	9	36.642	3.4424	+ 20	42	14.04	13.486
α Persei	1.9	3	17	44.925	+ 4.2656	+ 49	32	3.57	13.007
ι Hydri	5.7	3	18	14.060	- 1.5669	- 77	43	29.13	13.044
f Tauri	4.3	3	25	47.526	+ 3.3081	+ 12	37	18.80	12.495
ϵ Eridani	3.7	3	28	35.716	+ 2.8248	- 9	46	9.02	+ 12.326
δ Persei	3.1	3	36	22.174	4.2571	+ 47	29	38.39	11.720
γ Camelopardalis	4.6	3	40	37.941	6.2729	+ 71	2	58.28	11.396
η Tauri	3.1	3	42	0.792	3.5604	+ 23	49	16.16	11.304
ζ Persei	3.0	3	48	20.751	+ 3.7640	+ 31	36	39.52	10.878
γ Hydri	3.3	3	48	39.225	0.9727	- 74	31	15.87	+ 10.987
ϵ Persei	3.0	3	51	40.619	+ 4.0172	+ 39	44	40.85	10.620
γ Eridani	3.0	3	53	44.205	2.7981	- 13	46	11.23	10.383
A' Tauri	4.6	3	59	15.253	3.5422	+ 21	49	51.95	10.021
c Persei	4.3	4	1	58.729	4.3446	+ 47	28	3.05	9.841
α' Eridani	4.2	4	7	22.444	+ 2.9269	- 7	4	37.01	+ 9.545
γ Tauri	3.8	4	14	33.376	3.4108	+ 15	24	21.63	8.875
ϵ Tauri	3.6	4	23	14.582	+ 3.4999	+ 18	58	37.00	8.180
δ Mensæ	5.6	4	24	10.372	- 4.1671	- 80	25	47.93	8.212
m Persei	6.0	4	26	56.326	+ 4.2133	+ 42	52	4.93	7.922
α Tauri (<i>Aldebaran</i>)	1.0	4	30	38.401	+ 3.4393	+ 16	19	29.62	+ 7.430
τ Tauri	4.5	4	36	43.307	3.5978	+ 22	46	51.59	7.105
α Camelopardalis	4.4	4	44	53.919	5.9434	+ 66	11	14.49	6.457
i Tauri	5.2	4	45	59.444	3.5069	+ 18	41	1.87	6.327
ι Aurigæ	2.8	4	51	0.024	3.9029	+ 33	1	15.81	5.923
ζ Aurigæ	3.9	4	56	2.700	+ 4.1883	+ 40	56	32.18	+ 5.500
11 Orionis	4.7	4	59	18.665	3.4261	+ 15	16	35.60	5.211
β Eridani	2.9	5	3	19.606	2.9489	- 5	12	17.35	4.832
α Aurigæ (<i>Capella</i>)	0.1	5	9	53.451	4.4276	+ 45	54	18.65	3.919
β Orionis (<i>Rigel</i>)	0.3	5	10	6.952	2.8820	- 8	18	26.64	4.329
τ Orionis	3.8	5	13	8.340	+ 2.9122	- 6	56	35.89	+ 4.066
β Tauri	1.8	5	20	28.516	3.7907	+ 28	31	49.37	3.263
χ Aurigæ	5.0	5	26	44.337	3.9034	+ 32	7	28.58	2.886
δ Orionis (<i>var.</i>)	2.3	5	27	18.360	3.0640	- 0	22	0.14	2.848
Groombridge 966	6.4	5	27	25.000	8.0041	+ 74	59	3.18	2.857
α Leporis	2.7	5	28	40.346	+ 2.6455	- 17	53	15.68	+ 2.731
ϵ Orionis	1.8	5	31	32.684	3.0433	- 1	15	36.38	2.484
Groombridge 944	6.4	5	32	24.027	18.7302	+ 85	9	9.71	2.404
α Columbæ	2.7	5	36	19.057	2.1723	- 34	7	22.13	2.030
κ Orionis	2.3	5	43	23.583	2.8447	- 9	42	6.52	1.448
δ Doradus	4.4	5	44	36.395	+ 0.1016	- 65	46	12.10	+ 1.345
ν Aurigæ	4.1	5	45	6.783	4.1570	+ 39	7	20.10	1.314
α Orionis (<i>var.</i>)	0.9	5	50	11.453	+ 3.2477	+ 7	23	25.71	+ 0.867

MEAN PLACES FOR 1908.0. (January 1 ^d .037, Washington.)					
Name of Star.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ' "	"
β Aurigæ	2.0	5 52 46.848	+ 4.4016	+ 44 56 19.85	+ 0.625
θ Aurigæ	2.9	5 53 26.861	4.0914	+ 37 12 24.46	+ 0.482
ν Orionis	4.5	6 2 19.173	3.4263	+ 14 46 48.05	- 0.228
22 Camelopardalis (H.)	4.7	6 8 42.656	6.6193	+ 69 21 11.73	0.875
γ Geminorum	3.5	6 9 19.494	3.6227	+ 22 32 2.61	0.832
μ Geminorum	3.2	6 17 23.709	+ 3.6308	+ 22 33 41.22	- 1.634
ψ ¹ Aurigæ	5.1	6 17 48.903	4.6263	+ 49 20 8.33	1.560
α Argûs (<i>Canopus</i>)	-0.8	6 21 54.578	1.3318	- 52 38 42.83	1.905
ν Geminorum	4.2	6 23 30.038	3.5630	+ 20 16 15.57	2.068
γ Geminorum	2.0	6 32 23.860	3.4672	+ 16 28 42.12	2.872
ε Geminorum	3.2	6 38 16.353	+ 3.6931	+ 25 13 22.32	- 3.350
ψ ⁵ Aurigæ	5.4	6 40 6.650	4.3305	+ 43 40 10.93	3.330
† α Canis Majoris (<i>Sirius</i>)	-1.4	6 41 5.642	2.6435	- 16 35 22.20	4.782
θ Geminorum	3.7	6 46 43.620	+ 3.9587	+ 34 4 22.23	4.109
ζ Mensæ	5.6	6 47 42.987	- 4.9311	- 80 43 1.89	4.062
ε Canis Majoris	1.5	6 55 0.600	+ 2.3573	- 28 50 47.10	- 4.763
51 Cephei (H.)	5.3	6 57 40.32*	29.4314	+ 87 11 41.65	5.027
ζ Geminorum (<i>var.</i>)	4.0	6 58 39.201	3.5610	+ 20 42 20.99	5.082
δ Canis Majoris	1.9	7 4 38.988	2.4381	- 26 14 48.05	5.577
63 Aurigæ	5.2	7 5 19.791	+ 4.1338	+ 39 28 16.68	5.640
γ ² Volantis (<i>var.</i>)	3.9	7 9 31.783	- 0.4989	- 70 20 58.52	- 5.911
25 Camelopardalis (H.)	5.3	7 11 46.745	+ 12.8629	+ 82 35 26.85	6.223
δ Geminorum	3.5	7 14 37.805	3.5870	+ 22 9 8.40	6.428
Piazzi vii, 67	5.7	7 21 19.017	6.2810	+ 68 39 16.32	7.009
β Canis Minoris	3.1	7 22 9.749	3.2557	+ 8 28 30.83	7.081
α ² Geminorum (<i>Castor</i>)	1.9	7 28 43.900	+ 3.8341	+ 32 5 28.13	- 7.651
† α Canis Min. (<i>Procyon</i>)	0.5	7 34 29.196	3.1425	+ 5 27 40.16	9.070
β Geminorum (<i>Pollux</i>)	1.2	7 39 41.284	3.6766	+ 28 14 56.34	8.502
φ Geminorum	5.0	7 47 52.143	3.6775	+ 27 0 16.39	9.117
26 Lyncis	5.8	7 48 1.094	4.3836	+ 47 48 13.58	9.108
Groombridge 1374	5.6	7 49 12.051	+ 7.2571	+ 74 9 52.95	- 9.231
ω ¹ Cancri	6.0	7 55 21.967	3.6348	+ 25 38 42.70	9.674
15 Argûs (ρ)	3.1	8 3 37.545	2.5546	- 24 2 18.86	10.244
3 Ursæ Majoris (H.)	5.5	8 3 40.107	6.0204	+ 68 44 44.82	10.295
ζ ¹ Cancri	4.8	8 6 56.238	3.4453	+ 17 55 32.97	10.672
β Cancri	3.8	8 11 31.613	+ 3.2562	+ 9 28 10.51	- 10.936
30 Monocerotis	3.9	8 21 3.871	+ 2.9998	- 3 36 20.94	11.594
θ Chamæleontis	4.6	8 23 24.808	- 1.7356	- 77 11 16.78	11.725
γ Cancri	5.4	8 27 23.436	+ 3.4753	+ 20 45 14.98	12.077
σ Hydræ	4.5	8 33 56.998	3.1387	+ 3 39 53.74	12.488
γ Cancri	4.9	8 37 57.860	+ 3.4779	+ 21 47 59.45	- 12.792
ε Hydræ	3.5	8 41 54.321	3.1802	+ 6 45 24.64	13.061
σ ² Cancri (<i>mean</i>)	5.5	8 48 38.074	3.6695	+ 30 55 41.94	13.476
ι Ursæ Majoris	3.3	8 52 54.844	4.1258	+ 48 24 12.22	13.979
σ ² Ursæ Majoris	5.0	9 2 18.713	5.3314	+ 67 30 31.19	14.383
κ Cancri	5.1	9 2 45.948	+ 3.2533	+ 11 2 19.83	- 14.358
θ Hydræ	4.0	9 9 34.746	3.1240	+ 2 42 10.27	15.067
β Argûs	2.0	9 12 11.626	+ 0.6725	- 69 20 17.47	- 14.815

† Periodic corrections given in the Appendix are still to be applied to the positions of Sirius and Procyon.

MEAN PLACES FOR 1908.0. (January 1^d.037, Washington.)

Name of Star.	Magni- tude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s	s	°	'	"	"
ε Argūs	2.6	9	14	37.553	+ 1.6042	58	53	20.11	- 15.044
α Lyncis	3.3	9	15	27.227	3.6654	+ 34	46	55.31	15.085
α Hydræ	2.1	9	23	4.012	2.9487	- 8	15	33.88	15.494
1 Draconis (H.)	4.5	9	24	2.339	8.8545	+ 81	44	2.30	15.608
δ Ursæ Majoris	4.8	9	26	21.898	5.3719	+ 70	14	6.98	15.637
θ Ursæ Majoris	3.2	9	26	42.629	+ 4.0342	+ 52	5	49.68	- 16.271
10 Leonis Minoris	4.7	9	28	35.479	3.6872	+ 36	48	23.33	15.849
ο Leonis	3.8	9	36	14.523	+ 3.2056	+ 10	18	40.73	16.263
ζ Chamæleontis	5.2	9	36	37.141	- 1.6302	- 80	31	40.81	16.231
ε Leonis	3.2	9	40	37.890	+ 3.4122	+ 24	11	53.40	16.474
μ Leonis	4.0	9	47	31.997	+ 3.4185	+ 26	26	26.22	- 16.844
19 Leonis Minoris	5.2	9	52	3.225	3.6875	+ 41	29	38.98	17.025
π Leonis	5.0	9	55	21.168	3.1728	+ 8	29	9.41	17.180
α Leonis (<i>Regulus</i>) . . .	1.3	10	3	28.435	3.1989	+ 12	25	1.69	17.512
32 Ursæ Majoris	5.7	10	11	21.872	4.4013	+ 65	34	3.59	17.848
λ Ursæ Majoris	3.6	10	11	33.209	+ 3.6337	+ 43	22	26.99	- 17.882
γ' Leonis	2.5	10	14	54.131	3.3126	+ 20	18	25.93	18.127
μ Hydræ	4.1	10	21	38.433	2.9002	- 16	21	58.83	18.307
β Leonis Minoris	4.3	10	22	34.059	3.4812	+ 37	10	43.86	18.374
α Antlæ	4.5	10	22	56.436	2.7417	- 30	35	57.81	18.298
9 Draconis (H.)	5.0	10	27	18.028	+ 5.2034	+ 76	11	14.10	- 18.438
ρ Leonis	4.0	10	27	58.103	3.1622	+ 9	46	49.10	18.455
41 Leonis Minoris	5.1	10	38	24.968	3.2682	+ 23	40	13.00	18.780
γ Argūs (<i>var.</i>)	1-6	10	41	29.352	2.3193	- 59	12	2.52	18.891
ι Leonis	5.3	10	44	25.376	3.1570	+ 11	1	55.71	18.999
δ Chamæleontis	4.7	10	44	55.647	+ 0.6011	- 80	3	17.78	- 18.984
46 Leonis Minoris	3.9	10	48	10.196	3.3653	+ 34	42	39.94	19.353
Groombridge 1706	6.3	10	52	37.181	4.9100	+ 78	15	47.61	19.221
α Ursæ Majoris	2.0	10	58	3.557	+ 3.7342	+ 62	14	52.26	19.389
η Octantis	6.1	10	59	58.41*	- 0.3324	- 84	5	56.31	19.367
ρ' Leonis	6.2	11	2	12.694	+ 3.0615	+ 2	27	18.73	- 19.492
ψ Ursæ Majoris	3.2	11	4	29.764	3.3877	+ 44	59	52.29	19.494
δ Leonis	2.7	11	9	13.063	3.1962	+ 21	1	40.32	19.697
ν Ursæ Majoris	3.7	11	13	30.761	3.2495	+ 33	35	47.26	19.609
δ Crateris	3.9	11	14	44.400	2.9969	- 14	16	50.01	19.461
τ Leonis	5.1	11	23	12.384	+ 3.0859	+ 3	21	46.94	- 19.805
λ Draconis	4.0	11	25	57.238	3.6040	+ 69	50	20.19	19.846
ξ Hydræ	3.8	11	28	28.492	2.9450	31	20	54.79	19.911
ο Leonis	4.4	11	32	14.297	3.0715	0	18	56.58	19.860
χ Ursæ Majoris	3.9	11	41	11.820	3.1825	+ 48	17	22.38	19.959
β Leonis	2.2	11	44	22.090	+ 3.0629	+ 15	5	10.99	- 20.118
γ Ursæ Majoris	2.4	11	48	59.814	3.1730	+ 54	12	22.64	20.019
π Virginis	4.6	11	56	9.512	3.0744	+ 7	7	38.40	20.075
ο Virginis	4.3	12	0	31.394	3.0572	+ 9	14	38.07	20.014
ε Corvi	3.2	12	5	23.479	3.0802	22	6	29.25	20.038
4 Draconis (H.)	5.1	12	7	53.994	+ 2.8560	+ 78	7	38.83	20.015
γ Corvi	2.7	12	11	4.372	3.0808	17	1	51.79	20.006
2 Canum Venaticorum . .	6.0	12	11	31.206	+ 3.0176	+ 41	10	19.86	20.067

MEAN PLACES FOR 1908.0. (January 1^d.037, Washington.)

Name of Star.	Magni- tude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s	s	°	'	"	"
β Chamæleontis	4.5	12	12	55.838	+ 3.4344	- 78	48	4.97	- 19.997
6 Ursæ Minoris (B.)	6.2	12	14	25.336	0.3094	+ 88	12	35.61	19.948
η Virginis	4.0	12	15	11.944	3.0691	- 0	9	20.06	20.029
α ¹ Crucis	0.9	12	21	28.389	3.3072	- 62	35	21.47	19.998
δ ^o Corvi	3.1	12	25	6.157	3.1004	- 16	0	11.83	20.075
β Canum Venaticorum	4.4	12	29	22.626	+ 2.8577	+ 41	51	26.21	- 19.602
β Corvi	2.8	12	29	33.100	3.1443	- 22	53	16.96	19.941
κ Draconis	3.8	12	29	33.714	2.5813	+ 70	17	43.06	19.870
γ Virginis (<i>mean</i>)	2.9	12	36	59.932	3.0395	- 0	56	41.62	19.782
31 Comæ Berenices	5.1	12	47	13.089	2.9246	+ 28	2	28.30	19.646
32 ^a Camelopardalis (H.)	5.2	12	48	26.513	+ 0.4248	+ 83	54	46.71	- 19.584
α Canum Venaticorum	3.2	12	51	43.558	2.8116	+ 38	48	54.35	19.489
δ Muscæ	3.8	12	55	55.635	4.0626	- 71	3	9.88	19.483
ε Virginis	3.1	12	57	35.835	2.9865	+ 11	27	12.53	19.402
θ Virginis	4.6	13	5	11.108	3.1027	- 5	2	52.79	19.281
20 Canum Venaticorum	4.7	13	13	25.184	+ 2.6965	+ 41	3	24.66	- 19.011
α Virginis (<i>Spica</i>)	1.1	13	20	20.679	3.1562	- 10	40	52.53	18.859
κ Octantis	5.4	13	25	53.26*	8.9660	- 85	18	54.32	18.678
ζ Virginis	3.6	13	30	0.245	3.0541	- 0	7	32.51	18.481
B. A. C. 4536	5.0	13	30	41.435	2.6823	+ 37	39	12.99	18.501
m Virginis	5.4	13	36	46.896	+ 3.1445	- 8	14	20.36	- 18.253
η Ursæ Majoris	1.9	13	43	55.027	2.3686	+ 49	46	19.89	18.043
γ Bootis	2.8	13	50	18.257	2.8568	+ 18	51	31.08	18.132
θ Apodis (<i>var.</i>)	5.0	13	56	20.108	5.7189	- 76	21	11.06	17.547
β Centauri	0.7	13	57	19.399	4.1998	- 59	55	46.06	17.509
π Hydræ	3.6	14	1	7.764	+ 3.4078	- 26	14	22.17	- 17.457
α Draconis	3.7	14	1	53.935	1.6241	+ 64	48	55.35	17.266
δ Bootis	4.8	14	6	12.328	2.7401	+ 25	31	37.66	17.161
κ Virginis	4.2	14	7	59.187	+ 3.1960	- 9	50	44.87	16.868
4 Ursæ Minoris	4.9	14	9	11.619	- 0.2920	+ 77	58	47.15	16.919
α Bootis (<i>Arcturus</i>)	0.2	14	11	27.882	+ 2.7353	+ 19	39	39.87	- 18.840
δ Octantis	5.0	14	12	4.814	9.1721	- 83	14	49.92	16.822
λ Bootis	4.3	14	12	53.256	2.2835	+ 46	30	37.76	16.619
λ Virginis	4.7	14	14	7.748	3.2398	- 12	56	52.61	16.689
θ Bootis	4.1	14	22	3.939	+ 2.0434	+ 52	16	32.62	16.722
5 Ursæ Minoris	4.5	14	27	42.470	- 0.1709	+ 76	6	18.17	- 16.004
ρ Bootis	3.6	14	27	51.929	+ 2.5866	+ 30	46	29.76	15.903
α ^o Centauri	0.2	14	33	20.577	4.0495	- 60	27	21.86	14.998
33 Bootis	5.3	14	35	24.861	2.2343	+ 44	48	4.34	15.654
α Apodis	4.1	14	36	23.412	7.2643	- 78	39	17.51	15.581
ε Bootis	2.6	14	40	58.152	+ 2.6203	+ 27	27	42.10	- 15.292
α ^o Libræ	2.9	14	45	47.187	+ 3.3127	- 15	39	35.41	15.103
β Ursæ Minoris	2.2	14	50	57.924	- 0.2116	+ 74	31	53.30	14.720
β Bootis	3.7	14	58	28.842	+ 2.2600	+ 40	45	11.13	14.308
γ Scorpii	3.4	14	58	40.973	3.5034	- 24	55	14.61	14.304
δ Bootis	3.5	15	11	47.632	+ 2.4192	+ 33	39	27.45	- 13.552
β Libræ	2.9	15	12	3.272	+ 3.2240	9	2	37.96	13.434
γ ^o Ursæ Minoris	3.2	15	20	52.118	0.1209	+ 72	9	40.82	- 12.814

MEAN PLACES FOR 1908.0. (January 1^d.037, Washington.)

Name of Star.	Magni- tude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s	s	°	'	"	"
μ^1 Bootis	4.5	15	21	0.899	+ 2.2663	+ 37	41	58.03	- 12.736
ρ Octantis	5.7	15	21	56.89*	13.2372	- 84	9	36.92	12.675
β Coronæ Borealis	3.9	15	24	2.159	2.4737	+ 29	25	20.79	12.535
α Coronæ Borealis	2.3	15	30	47.537	2.5393	+ 27	1	25.92	12.248
α Serpentis	2.7	15	39	44.126	2.9526	+ 6	42	52.62	11.475
ϵ Serpentis	3.7	15	46	13.731	+ 2.9879	+ 4	45	15.51	- 10.978
ζ Ursæ Minoris	4.6	15	47	19.569	- 2.2176	+ 78	4	40.22	10.971
ϵ Coronæ Borealis	4.1	15	53	46.669	+ 2.4821	+ 27	8	37.80	10.558
δ Scorpii	2.6	15	54	53.454	3.5412	- 22	21	37.39	10.442
β^1 Scorpii	2.9	16	0	5.092	3.4825	- 19	33	14.78	10.045
φ Herculis	4.2	16	5	52.257	+ 1.8894	+ 45	10	32.87	- 9.539
Groombridge 2320	5.5	16	6	4.105	0.1500	+ 68	3	8.56	9.508
δ^1 Apodis	4.9	16	6	34.116	8.8300	- 78	27	54.69	9.577
δ Ophiuchi	2.8	16	9	31.385	3.1409	- 3	27	28.44	9.437
σ Coronæ Borealis	5.3	16	11	13.977	2.2456	+ 34	5	29.36	9.232
τ Herculis	3.9	16	16	58.529	+ 1.8028	+ 46	31	55.49	- 8.682
γ Apodis	4.0	16	19	18.774	+ 9.0801	- 78	41	30.44	8.608
η Ursæ Minoris	5.0	16	20	10.881	- 1.7984	+ 75	58	3.49	8.205
η Draconis	2.8	16	22	44.624	+ 0.8066	+ 61	43	20.18	8.196
α Scorpii (<i>Antares</i>)	1.2	16	23	45.859	3.6731	- 26	13	42.15	8.201
β Herculis	2.8	16	26	15.835	+ 2.5772	+ 21	41	22.33	- 7.997
Λ Draconis	5.0	16	28	9.501	- 0.1325	+ 68	58	1.90	7.784
ζ Ophiuchi	2.8	16	32	5.489	+ 3.3002	- 10	22	52.53	7.480
α Trianguli Australis	2.2	16	38	54.864	6.3174	- 68	51	34.87	6.995
η Herculis	3.7	16	39	44.483	2.0555	+ 39	5	48.39	6.970
κ Ophiuchi	3.4	16	53	18.772	+ 2.8379	+ 9	31	3.10	- 5.762
ϵ Ursæ Minoris	4.5	16	55	21.880	- 6.2801	+ 82	11	23.32	5.579
d Herculis	5.3	16	58	12.509	+ 2.2118	+ 33	42	3.49	5.348
η Ophiuchi	2.5	17	5	6.015	3.4370	- 15	36	41.46	4.665
α^1 Herculis (<i>var.</i>)	3.2	17	10	27.121	2.7342	+ 14	29	40.74	4.271
π Herculis	3.4	17	11	50.520	+ 2.0882	+ 36	54	44.66	- 4.182
θ Ophiuchi	3.3	17	16	21.486	3.6812	- 24	54	29.88	3.830
b Ophiuchi (<i>var.</i>)	4.4	17	20	45.002	3.6604	- 24	5	28.91	3.554
δ Aræ	3.8	17	22	47.391	5.4040	- 60	36	29.12	3.360
β Draconis	3.0	17	28	21.206	1.3539	+ 52	22	9.13	2.750
α Ophiuchi	2.2	17	30	39.804	+ 2.7835	+ 12	37	35.12	- 2.794
ι Herculis	4.0	17	36	52.085	+ 1.6933	+ 46	3	17.87	2.017
ω Draconis	4.9	17	37	29.330	- 0.3550	+ 68	48	1.87	1.648
μ Herculis	3.5	17	42	51.450	+ 2.3468	+ 27	46	26.51	2.247
ψ^1 Draconis	4.8	17	43	34.331	- 1.0756	+ 72	11	39.08	1.704
θ Herculis	3.9	17	53	5.864	+ 2.0569	+ 37	15	44.19	- 0.599
γ Draconis	2.5	17	54	28.185	1.3923	+ 51	29	57.84	0.508
γ^2 Sagittarii	2.9	17	59	53.815	+ 3.8518	- 30	25	32.93	- 0.207
δ Ursæ Minoris	4.4	18	1	56.78*	- 19.4962	+ 86	36	50.36	+ 0.218
σ Herculis	3.9	18	3	57.204	+ 2.3393	+ 28	44	57.68	0.348
μ Sagittarii	4.1	18	8	15.660	+ 3.5869	- 21	5	0.54	+ 0.721
γ Serpentis	3.5	18	16	32.923	3.1027	- 2	55	23.42	0.755
λ Sagittarii	2.9	18	22	17.587	+ 3.7028	- 25	28	23.59	+ 1.748

MEAN PLACES FOR 1908.0. (January 1 ^d .037, Washington.)					
Name of Star.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ' "	"
χ Draconis	3.8	18 22 43.057	- 1.0780	+ 72 41 34.97	+ 1.610
ι Aquilæ	4.0	18 30 12.038	+ 3.2646	- 8 18 32.11	2.319
ζ Pavonis	4.2	18 32 17.245	7.0231	- 71 30 28.46	2.650
α Lyræ (<i>Vega</i>)	0.2	18 33 49.412	2.0313	+ 38 41 51.44	3.228
β Lyræ (<i>var.</i>)	3.6	18 46 40.987	+ 2.2146	+ 33 15 19.53	4.050
50 Draconis	5.6	18 49 20.851	- 1.9162	+ 75 19 32.21	+ 4.334
σ Sagittarii	2.3	18 49 33.632	+ 3.7205	- 26 24 41.91	4.226
γ Lyræ	3.3	18 55 30.107	2.2434	+ 32 33 46.39	4.802
ζ Aquilæ	3.1	19 1 10.886	2.7569	+ 13 43 34.27	5.189
ϵ Lyræ	5.2	19 4 1.149	2.1412	+ 35 57 19.45	5.521
δ Sagittarii	5.0	19 12 15.158	+ 3.5114	- 19 7 1.86	+ 6.199
δ Draconis	3.1	19 12 32.208	0.0240	+ 67 29 58.90	6.327
σ Octantis	5.6	19 13 9.55*	99.0702	- 89 14 30.61	6.290
θ Lyræ	4.4	19 13 10.461	+ 2.0807	+ 37 58 10.39	6.298
λ Ursæ Minoris	6.5	19 13 18.58*	- 69.9043	+ 89 0 9.36	6.311
τ Draconis	4.5	19 17 19.744	- 1.1315	+ 73 11 5.72	+ 6.746
δ Aquilæ	3.5	19 20 51.594	+ 3.0251	+ 2 55 50.97	7.008
β Cygni	3.1	19 27 0.656	2.4188	+ 27 45 57.50	7.419
κ Aquilæ	5.0	19 31 56.577	3.2291	- 7 13 56.78	7.830
β Sagittæ	4.5	19 36 54.998	2.6939	+ 17 15 44.77	8.195
γ Aquilæ	2.8	19 41 53.150	+ 2.8520	+ 10 23 18.77	+ 8.618
δ Cygni	2.9	19 42 6.013	1.8760	+ 44 54 21.00	8.682
α Aquilæ (<i>Altair</i>)	0.9	19 46 17.680	+ 2.9272	+ 8 37 29.32	9.346
ϵ Draconis	3.9	19 48 29.429	- 0.1845	+ 70 2 0.92	9.166
ϵ Pavonis	4.1	19 49 57.785	+ 6.9989	- 73 9 14.23	9.133
β Aquilæ	3.9	19 50 47.654	+ 2.9469	+ 6 10 35.40	+ 8.837
γ Sagittæ	3.6	19 54 39.925	2.6673	+ 19 14 30.54	9.641
c Sagittarii	4.5	19 57 0.167	3.6939	- 27 57 58.11	9.809
τ Aquilæ	5.7	19 59 38.758	2.9309	+ 7 1 4.99	10.026
θ Aquilæ	3.3	20 6 33.507	3.0963	- 1 5 41.32	10.521
31 Cygni	3.9	20 10 44.121	+ 1.8901	+ 46 27 43.15	+ 10.830
κ Cephei (<i>pr.</i>)	4.4	20 12 0.181	- 1.9535	+ 77 26 4.79	10.944
α^2 Capricorni	3.7	20 12 57.070	+ 3.3310	- 12 49 49.66	10.995
α Pavonis	2.1	20 18 22.446	4.7685	- 57 1 49.70	11.289
γ Cygni	2.3	20 18 55.574	2.1525	+ 39 57 42.57	11.422
π Capricorni	5.1	20 22 3.385	+ 3.4371	- 18 30 49.23	+ 11.642
ϵ Delphini	4.0	20 28 49.079	+ 2.8665	+ 10 59 24.40	12.096
Groombridge 3241	6.5	20 30 24.656	- 0.2339	+ 72 13 12.09	12.213
α Delphini	3.9	20 35 21.906	+ 2.7868	+ 15 35 14.18	12.589
β Pavonis	3.4	20 36 40.666	5.4513	- 66 32 4.07	12.658
α Cygni	1.4	20 38 17.717	+ 2.0446	+ 44 57 4.39	+ 12.768
ψ Capricorni	4.3	20 40 39.038	3.5578	- 25 36 6.38	12.781
ϵ Cygni	2.6	20 42 29.322	2.4273	+ 33 37 30.97	13.377
μ Aquarii	4.8	20 47 41.564	+ 3.2383	- 9 19 44.51	13.355
12 Year Catalogue 1879	5.3	20 51 47.304	- 2.6059	+ 80 12 27.76	13.633
ν Cygni	4.1	20 53 44.570	+ 2.2353	+ 40 48 45.19	+ 13.765
61 Cygni	5.4	21 2 46.299	2.6850	+ 38 17 47.69	17.591
ζ Cygni	3.3	21 9 1.208	+ 2.5518	+ 29 50 56.98	+ 14.660

MEAN PLACES FOR 1908.0. (January 1^d.037, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ' "	"
γ Cygni	3.8	21 11 7.091	+ 2.3937	+ 37 39 8.51	+ 15.279
α Cephei	2.6	21 16 23.107	1.4354	+ 62 11 44.07	15.201
1 Pegasi	4.3	21 17 49.898	2.7739	+ 19 24 37.92	15.297
5 Capricorni	3.8	21 21 25.016	3.4315	- 22 48 36.63	15.455
β Aquarii	2.9	21 26 43.001	3.1604	- 5 58 34.68	15.717
β Cephei (<i>pr.</i>)	3.4	21 27 28.650	+ 0.7885	+ 70 9 24.23	+ 15.774
ε Aquarii	4.8	21 32 51.327	3.1962	- 8 16 1.68	16.032
74 Cygni	5.0	21 33 15.662	2.4028	+ 39 59 59.66	16.085
λ Octantis	5.4	21 36 53.495	9.6086	83 8 33.57	16.251
ε Pegasi	2.4	21 39 40.038	2.9462	+ 9 27 10.25	16.403
11 Cephei	4.8	21 40 34.615	+ 0.8905	+ 70 53 15.59	+ 16.543
π Cygni	4.5	21 43 23.610	2.2139	+ 48 53 1.07	16.588
μ Capricorni	5.2	21 48 16.881	3.2738	- 13 59 6.96	16.826
16 Pegasi	5.1	21 48 52.527	2.7280	+ 25 29 31.39	16.859
79 Draconis	6.6	21 51 42.767	0.7222	+ 73 16 0.95	17.002
α Aquarii	3.0	22 1 3.556	+ 3.0823	- 0 46 1.34	+ 17.404
α Gruis	1.9	22 2 26.322	3.7969	- 47 24 25.16	17.292
π Pegasi	4.3	22 5 54.034	2.6620	+ 32 43 35.44	17.394
θ Aquarii	4.4	22 11 58.788	3.1677	- 8 14 29.79	17.842
υ Octantis	6.2	22 14 16.65*	12.5836	- 86 26 9.69	18.025
γ Aquarii	4.0	22 16 54.292	+ 3.0994	1 51 3.90	+ 18.067
π Aquarii	4.6	22 20 34.716	3.0639	+ 0 54 36.93	18.188
α Aquarii	4.9	22 25 46.795	3.1777	- 11 8 56.09	18.350
α Lacertæ	3.9	22 27 29.991	2.4668	+ 49 48 33.34	18.449
γ Aquarii	4.2	22 30 37.754	3.0834	- 0 35 30.76	18.488
226 Cephei (B.)	5.7	22 30 39.641	+ 1.0673	+ 75 45 8.11	+ 18.542
10 Lacertæ	5.0	22 35 7.906	2.6879	+ 38 34 16.31	18.676
β Octantis	4.4	22 36 41.975	6.3655	- 81 51 51.12	18.739
5 Pegasi	3.5	22 36 52.403	2.9913	+ 10 21 3.06	18.728
λ Pegasi	4.1	22 42 5.902	2.8864	+ 23 4 52.71	18.890
ε Cephei	3.6	22 46 24.161	+ 2.1265	+ 65 42 58.88	+ 18.895
λ Aquarii	3.8	22 47 48.933	3.1314	- 8 4 9.61	19.095
α Pis. Austr. (<i>Fomalhaut</i>)	1.3	22 52 34.156	3.1224	- 30 6 36.16	19.013
" Andromedæ	3.8	22 57 41.129	2.7532	+ 41 49 52.96	19.300
α Pegasi (<i>Markab</i>)	2.5	23 0 10.627	2.9860	+ 14 42 36.42	19.328
φ Aquarii	4.3	23 9 33.484	+ 3.1075	- 6 32 42.41	+ 19.368
" Cephei	5.1	23 14 50.614	2.4488	+ 67 36 28.96	19.676
γ Pegasi	4.6	23 16 4.896	2.9650	+ 23 14 11.83	19.667
θ Piscium	4.3	23 23 18.041	3.0418	+ 5 52 24.98	19.749
λ Andromedæ	3.8	23 33 3.481	2.9262	+ 45 57 34.81	19.488
ε Piscium	4.3	23 35 13.066	+ 3.0842	+ 5 7 39.32	+ 19.493
γ Cephei	3.5	23 35 33.927	2.4334	+ 77 7 8.01	20.090
γ Aquarii	5.2	23 39 25.864	3.1151	- 18 47 15.57	19.960
δ Sculptoris	4.6	23 44 8.087	3.1289	- 28 38 21.68	19.865
γ Octantis	5.2	23 46 43.812	3.6375	- 82 31 48.44	20.001
Groombridge 4163	6.6	23 50 20.566	+ 2.8735	+ 73 53 54.01	+ 20.024
ω Piscium	4.2	23 54 35.183	+ 3.0792	+ 6 21 14.52	+ 19.933

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	γ Cephei (Hæv.).		Mean Solar Date.	6 Ursæ Min. (B.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Jan.	h m 1 25	° ' " +88 49	Jan.	h m 6 57	° ' " +87 11	Jan.	h m 12 14	° ' " +88 12	Jan.	h m 18 1	° ' " +86 36	Jan.	h m 19 12	° ' " +89 0
	s	"		s	"		s	"		s	"		s	"
0.3	76.10	9.6	0.5	57.30	38.4	0.7	23.17	22.0	0.9	40.48	50.0	1.0	27.73	13.2
1.3	75.19	9.1	1.5	57.48	38.7	1.7	23.87	21.9	1.9	40.43	49.7	2.0	27.17	12.9
2.3	74.25	9.3	2.5	57.66	39.0	2.7	24.62	21.9	2.9	40.38	49.3	3.0	26.62	12.6
3.3	73.24	9.4	3.5	57.83	39.4	3.7	25.41	21.8	3.9	40.35	48.9	4.0	26.10	12.3
4.3	72.17	9.6	4.5	57.99	39.7	4.7	26.21	21.8	4.9	40.34	48.5	5.0	25.62	11.9
5.3	71.05	9.7	5.5	58.13	40.1	5.7	27.03	21.8	5.9	40.36	48.2	6.0	25.22	11.5
6.3	69.90	9.8	6.5	58.24	40.5	6.7	27.85	21.8	6.9	40.41	47.8	7.0	24.91	11.2
7.3	68.74	9.9	7.5	58.31	40.8	7.7	28.65	21.9	7.9	40.48	47.4	7.9	24.70	10.8
8.3	67.59	10.0	8.5	58.35	41.2	8.7	29.42	21.9	8.9	40.57	47.0	8.9	24.57	10.4
9.3	66.49	10.0	9.5	58.37	41.5	9.7	30.14	22.0	9.9	40.67	46.7	9.9	24.48	10.1
10.2	65.44	10.1	10.5	58.39	41.8	10.7	30.83	22.0	10.9	40.77	46.4	10.9	24.41	9.8
11.2	64.44	10.1	11.5	58.40	42.1	11.7	31.49	22.1	11.9	40.86	46.1	11.9	24.34	9.5
12.2	63.47	10.2	12.5	58.41	42.4	12.7	32.12	22.1	12.9	40.94	45.8	12.9	24.26	9.2
13.2	62.53	10.2	13.5	58.44	42.7	13.7	32.76	22.1	13.9	41.02	45.5	13.9	24.14	8.9
14.2	61.59	10.3	14.5	58.49	43.0	14.7	33.42	22.2	14.9	41.09	45.2	14.9	23.98	8.6
15.2	60.61	10.3	15.5	58.52	43.3	15.7	34.11	22.2	15.9	41.16	44.9	15.9	23.81	8.2
16.2	59.58	10.4	16.5	58.56	43.7	16.7	34.82	22.2	16.9	41.24	44.5	16.9	23.65	7.9
17.2	58.50	10.4	17.5	58.59	44.0	17.7	35.57	22.2	17.9	41.33	44.2	17.9	23.53	7.6
18.2	57.35	10.5	18.5	58.60	44.3	18.7	36.35	22.3	18.9	41.44	43.8	18.9	23.47	7.2
19.2	56.16	10.5	19.5	58.59	44.7	19.7	37.13	22.4	19.9	41.57	43.4	19.9	23.48	6.8
20.2	54.95	10.5	20.4	58.55	45.1	20.7	37.90	22.5	20.9	41.74	43.1	20.9	23.59	6.4
21.2	53.74	10.5	21.4	58.47	45.4	21.7	38.65	22.6	21.9	41.93	42.7	21.9	23.79	6.1
22.2	52.58	10.5	22.4	58.38	45.8	22.7	39.36	22.7	22.9	42.13	42.4	22.9	24.04	5.7
23.2	51.47	10.4	23.4	58.27	46.1	23.7	40.02	22.9	23.9	42.33	42.1	23.9	24.32	5.4
24.2	50.42	10.4	24.4	58.14	46.4	24.7	40.64	23.0	24.9	42.53	41.8	24.9	24.61	5.1
25.2	49.43	10.3	25.4	58.03	46.7	25.7	41.23	23.2	25.9	42.71	41.6	25.9	24.87	4.8
26.2	48.47	10.3	26.4	57.94	47.0	26.7	41.81	23.3	26.9	42.88	41.3	26.9	25.10	4.5
27.2	47.53	10.2	27.4	57.86	47.3	27.7	42.39	23.4	27.9	43.04	41.0	27.9	25.28	4.2
28.2	46.59	10.2	28.4	57.79	47.6	28.7	42.98	23.5	28.9	43.19	40.7	28.9	25.43	3.9
29.2	45.63	10.2	29.4	57.73	47.9	29.7	43.60	23.6	29.9	43.34	40.4	29.9	25.55	3.6
30.2	44.62	10.2	30.4	57.67	48.2	30.6	44.26	23.8	30.9	43.51	40.1	30.9	25.70	3.2
31.2	43.55	10.1	31.4	57.59	48.5	31.6	44.95	23.9	31.9	43.68	39.8	31.9	25.90	2.9
32.2	42.43	10.1	32.4	57.49	48.9	32.6	45.65	24.0	32.9	43.87	39.5	32.9	26.15	2.5

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

α Ursæ Min. (Polaris).			51 Cephei (Hæv.).			6 Ursæ Min. (B.).			δ Ursæ Min.			λ Ursæ Min.		
Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.
Feb.	h m 1 25	° ' 00 +88 49	Feb.	h m 6 57	° ' 00 +87 11	Feb.	h m 12 14	° ' 00 +88 12	Feb.	h m 18 1	° ' 00 +86 36	Feb.	h m 19 12	° ' 00 +88 59
	s	"		s	"		s	"		s	"		s	"
1.2	42.43	10.1	1.4	57.49	48.9	1.6	45.65	24.0	1.9	43.87	39.5	1.9	26.15	62.5
2.2	41.29	10.1	2.4	57.36	49.2	2.6	46.34	24.2	2.9	44.10	39.2	2.9	26.49	62.2
3.2	40.14	10.0	3.4	57.20	49.5	3.6	47.01	24.4	3.9	44.35	38.9	3.9	26.92	61.8
4.2	39.00	9.9	4.4	57.01	49.9	4.6	47.66	24.6	4.9	44.61	38.6	4.9	27.43	61.5
5.2	37.91	9.8	5.4	56.80	50.2	5.6	48.26	24.8	5.9	44.88	38.3	5.9	28.00	61.2
6.2	36.88	9.6	6.4	56.57	50.5	6.6	48.81	25.1	6.9	45.17	38.1	6.9	28.61	60.9
7.2	35.92	9.5	7.4	56.35	50.7	7.6	49.32	25.3	7.9	45.44	37.9	7.9	29.21	60.6
8.2	35.00	9.3	8.4	56.12	51.0	8.6	49.80	25.5	8.9	45.79	37.6	8.9	29.80	60.3
9.2	34.13	9.2	9.4	55.90	51.2	9.6	50.27	25.7	9.9	45.95	37.4	9.9	30.35	60.0
10.2	33.28	9.1	10.4	55.69	51.5	10.6	50.74	25.9	10.9	46.19	37.2	10.9	30.86	59.8
11.2	32.41	9.0	11.4	55.50	51.7	11.6	51.24	26.1	11.9	46.42	37.0	11.9	31.35	59.5
12.2	31.51	8.9	12.4	55.31	52.0	12.6	51.77	26.2	12.9	46.66	36.8	12.9	31.83	59.2
13.2	30.57	8.8	13.4	55.12	52.3	13.6	52.32	26.4	13.9	46.91	36.5	13.9	32.34	59.0
14.2	29.58	8.6	14.4	54.92	52.6	14.6	52.89	26.6	14.9	47.18	36.3	14.9	32.90	58.7
15.2	28.56	8.5	15.4	54.69	52.9	15.6	53.46	26.8	15.8	47.47	36.0	15.9	33.53	58.3
16.2	27.51	8.4	16.4	54.43	53.2	16.6	54.02	27.1	16.8	47.78	35.8	16.9	34.24	58.0
17.2	26.47	8.2	17.4	54.14	53.4	17.6	54.56	27.3	17.8	48.12	35.5	17.9	35.03	57.7
18.2	25.46	8.0	18.4	53.83	53.7	18.6	55.06	27.6	18.8	48.47	35.3	18.9	35.88	57.4
19.1	24.51	7.8	19.4	53.51	54.0	19.6	55.51	27.9	19.8	48.82	35.1	19.9	36.77	57.2
20.1	23.64	7.6	20.4	53.18	54.2	20.6	55.91	28.2	20.8	49.16	35.0	20.9	37.68	56.9
21.1	22.83	7.3	21.4	52.84	54.4	21.6	56.28	28.5	21.8	49.49	34.8	21.9	38.58	56.7
22.1	22.07	7.1	22.4	52.52	54.6	22.6	56.61	28.7	22.8	49.81	34.7	22.9	39.43	56.5
23.1	21.37	6.9	23.4	52.22	54.8	23.6	56.93	29.0	23.8	50.11	34.6	23.9	40.22	56.3
24.1	20.69	6.7	24.4	51.93	55.0	24.6	57.26	29.2	24.8	50.39	34.4	24.9	40.97	56.0
25.1	19.97	6.5	25.4	51.66	55.2	25.6	57.61	29.5	25.8	50.68	34.3	25.9	41.69	55.8
26.1	19.23	6.4	26.4	51.40	55.4	26.6	57.98	29.7	26.8	50.96	34.1	26.9	42.40	55.6
27.1	18.46	6.2	27.4	51.14	55.6	27.6	58.37	30.0	27.8	51.25	33.9	27.9	43.14	55.4
28.1	17.65	6.0	28.4	50.86	55.9	28.6	58.78	30.2	28.8	51.57	33.8	28.9	43.92	55.1
29.1	16.80	5.8	29.3	50.55	56.1	29.6	59.19	30.5	29.8	51.90	33.6	29.9	44.78	54.9
30.1	15.94	5.6	30.3	50.21	56.4	30.6	59.60	30.8	30.8	52.25	33.4	30.9	45.72	54.6

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	<i>α</i> Ursæ Min. (Polaris).		Mean Solar Date.	51 Cephei (Hæv.).		Mean Solar Date.	6 Ursæ Min. (B.).		Mean Solar Date.	<i>δ</i> Ursæ Min.		Mean Solar Date.	<i>λ</i> Ursæ Min.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Mar.	h m	°	Mar.	h m	°	Mar.	h m	°	Mar.	h m	°	Mar.	h m	°
	1 25	+88 48		6 57	+87 11		12 14	+88 12		18 1	+86 36		19 12	+88 59
	s	"		s	"		s	"		s	"		s	"
1.1	15.94	65.6	1.3	50.21	56.4	1.6	59.60	30.8	1.8	52.25	33.4	1.9	45.72	54.6
2.1	15.11	65.4	2.3	49.84	56.6	2.6	59.97	31.1	2.8	52.63	33.2	2.9	46.74	54.4
3.1	14.32	65.1	3.3	49.46	56.8	3.6	60.29	31.5	3.8	53.00	33.1	3.8	47.81	54.1
4.1	13.59	64.8	4.3	49.06	57.0	4.6	60.55	31.8	4.8	53.39	33.0	4.8	48.92	53.9
5.1	12.94	64.6	5.3	48.65	57.1	5.6	60.77	32.1	5.8	53.77	32.9	5.8	50.03	53.8
6.1	12.36	64.3	6.3	48.26	57.3	6.6	60.95	32.4	6.8	54.13	32.9	6.8	51.12	53.6
7.1	11.83	64.0	7.3	47.87	57.4	7.6	61.11	32.7	7.8	54.47	32.8	7.8	52.17	53.4
8.1	11.33	63.7	8.3	47.50	57.5	8.6	61.26	33.0	8.8	54.80	32.8	8.8	53.18	53.3
9.1	10.83	63.5	9.3	47.14	57.6	9.5	61.42	33.3	9.8	55.14	32.7	9.8	54.14	53.2
10.1	10.32	63.3	10.3	46.79	57.8	10.5	61.61	33.6	10.8	55.46	32.6	10.8	55.08	53.0
11.1	9.78	63.0	11.3	46.46	57.9	11.5	61.82	33.8	11.8	55.79	32.6	11.8	56.02	52.9
12.1	9.21	62.8	12.3	46.11	58.1	12.5	62.05	34.1	12.8	56.13	32.5	12.8	57.00	52.7
13.1	8.58	62.5	13.3	45.74	58.2	13.5	62.29	34.4	13.8	56.48	32.4	13.8	58.03	52.5
14.1	7.94	62.3	14.3	45.36	58.4	14.5	62.52	34.7	14.8	56.86	32.3	14.8	59.12	52.3
15.1	7.31	62.0	15.3	44.95	58.6	15.5	62.73	35.0	15.8	57.25	32.2	15.8	60.28	52.1
16.1	6.70	61.7	16.3	44.51	58.7	16.5	62.92	35.4	16.8	57.65	32.1	16.8	61.51	52.0
17.1	6.16	61.4	17.3	44.06	58.8	17.5	63.05	35.7	17.8	58.06	32.1	17.8	62.77	51.8
18.1	5.69	61.0	18.3	43.61	58.9	18.5	63.13	36.0	18.8	58.46	32.1	18.8	64.05	51.7
19.1	5.30	60.7	19.3	43.15	59.0	19.5	63.16	36.4	19.8	58.85	32.1	19.8	65.32	51.6
20.1	4.97	60.4	20.3	42.70	59.1	20.5	63.15	36.7	20.8	59.22	32.2	20.8	66.53	51.6
21.1	4.70	60.1	21.3	42.28	59.1	21.5	63.13	37.0	21.8	59.57	32.2	21.8	67.69	51.5
22.1	4.47	59.8	22.3	41.89	59.2	22.5	63.11	37.3	22.8	59.91	32.2	22.8	68.79	51.4
23.1	4.25	59.5	23.3	41.51	59.2	23.5	63.10	37.6	23.7	60.24	32.3	23.8	69.83	51.4
24.1	4.00	59.2	24.3	41.15	59.2	24.5	63.10	37.9	24.7	60.56	32.3	24.8	70.84	51.3
25.1	3.72	59.0	25.3	40.79	59.3	25.5	63.13	38.2	25.7	60.87	32.3	25.8	71.85	51.2
26.0	3.39	58.7	26.3	40.41	59.4	26.5	63.19	38.5	26.7	61.20	32.3	26.8	72.89	51.2
27.0	3.04	58.5	27.3	40.03	59.5	27.5	63.25	38.8	27.7	61.55	32.2	27.8	73.98	51.1
28.0	2.68	58.2	28.3	39.63	59.5	28.5	63.29	39.1	28.7	61.91	32.2	28.8	75.14	51.0
29.0	2.32	57.9	29.3	39.20	59.6	29.5	63.31	39.5	29.7	62.28	32.3	29.8	76.36	50.9
30.0	2.01	57.6	30.3	38.75	59.7	30.5	63.29	39.8	30.7	62.67	32.3	30.8	77.63	50.8
31.0	1.77	57.2	31.3	38.29	59.7	31.5	63.22	40.2	31.7	63.05	32.4	31.8	78.94	50.7
32.0	1.59	56.9	32.3	37.82	59.7	32.5	63.10	40.5	32.7	63.44	32.5	32.8	80.25	50.7

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

α Ursæ Min. (Polaris).			γ Cephei (Hæv.).			6 Ursæ Min. (B.).			δ Ursæ Min.			λ Ursæ Min.		
Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.
Apr.	h m	° '	Apr.	h m	° '	Apr.	h m	° '	Apr.	h m	° '	Apr.	h m	° '
	1 25	+88 48		6 57	+87 11		12 14	+88 12		18 2	+86 36		19 13	+88 59
	s	"		s	"		s	"		s	"		s	"
1.0	1.59	56.9	1.3	37.82	59.7	1.5	63.10	40.5	1.7	3.44	32.5	1.8	20.25	50.7
2.0	1.49	56.5	2.3	37.37	59.7	2.5	62.94	40.9	2.7	3.81	32.6	2.8	21.54	50.7
3.0	1.45	56.2	3.3	36.93	59.7	3.5	62.74	41.2	3.7	4.16	32.7	3.8	22.78	50.7
4.0	1.46	55.9	4.3	36.50	59.6	4.5	62.53	41.5	4.7	4.48	32.8	4.8	23.98	50.7
5.0	1.50	55.6	5.3	36.09	59.6	5.5	62.33	41.8	5.7	4.80	32.9	5.8	25.11	50.8
6.0	1.52	55.3	6.3	35.70	59.6	6.5	62.14	42.0	6.7	5.10	33.0	6.8	26.19	50.8
7.0	1.53	55.0	7.2	35.32	59.5	7.5	61.97	42.3	7.7	5.41	33.1	7.8	27.26	50.8
8.0	1.50	54.7	8.2	34.95	59.5	8.5	61.83	42.5	8.7	5.72	33.2	8.8	28.33	50.8
9.0	1.43	54.5	9.2	34.56	59.5	9.5	61.71	42.8	9.7	6.04	33.3	9.8	29.44	50.8
10.0	1.33	54.2	10.2	34.17	59.5	10.5	61.59	43.1	10.7	6.38	33.3	10.7	30.60	50.8
11.0	1.22	53.9	11.2	33.76	59.5	11.5	61.46	43.4	11.7	6.73	33.4	11.7	31.81	50.8
12.0	1.15	53.6	12.2	33.32	59.5	12.5	61.31	43.7	12.7	7.09	33.5	12.7	33.08	50.8
12.9	1.12	53.2	13.2	32.86	59.4	13.5	61.10	44.0	13.7	7.45	33.7	13.7	34.39	50.8
13.9	1.16	52.9	14.2	32.41	59.4	14.5	60.84	44.3	14.7	7.81	33.8	14.7	35.71	50.8
14.9	1.27	52.5	15.2	31.96	59.3	15.4	60.53	44.6	15.7	8.16	34.0	15.7	37.00	50.9
15.9	1.47	52.2	16.2	31.52	59.2	16.4	60.19	44.9	16.7	8.49	34.2	16.7	38.25	51.0
16.9	1.72	51.9	17.2	31.10	59.1	17.4	59.83	45.2	17.7	8.80	34.4	17.7	39.44	51.1
17.9	2.02	51.6	18.2	30.72	59.0	18.4	59.46	45.5	18.7	9.08	34.6	18.7	40.56	51.2
18.9	2.33	51.3	19.2	30.36	58.9	19.4	59.10	45.7	19.7	9.34	34.8	19.7	41.60	51.3
19.9	2.63	51.0	20.2	30.01	58.7	20.4	58.76	46.0	20.7	9.59	34.9	20.7	42.58	51.4
20.9	2.90	50.7	21.2	29.68	58.6	21.4	58.45	46.2	21.7	9.83	35.1	21.7	43.54	51.5
21.9	3.13	50.5	22.2	29.36	58.5	22.4	58.17	46.4	22.7	10.09	35.3	22.7	44.51	51.6
22.9	3.33	50.2	23.2	29.02	58.5	23.4	57.89	46.7	23.7	10.35	35.4	23.7	45.50	51.6
23.9	3.50	50.0	24.2	28.67	58.4	24.4	57.61	46.9	24.7	10.63	35.5	24.7	46.55	51.7
24.9	3.68	49.7	25.2	28.30	58.3	25.4	57.32	47.2	25.7	10.92	35.7	25.7	47.66	51.8
25.9	3.88	49.4	26.2	27.92	58.2	26.4	57.00	47.5	26.7	11.21	35.9	26.7	48.81	51.9
26.9	4.13	49.1	27.2	27.52	58.1	27.4	56.63	47.8	27.7	11.51	36.1	27.7	49.99	52.0
27.9	4.45	48.8	28.2	27.11	58.0	28.4	56.21	48.0	28.7	11.80	36.3	28.7	51.18	52.1
28.9	4.85	48.5	29.2	26.71	57.8	29.4	55.74	48.3	29.6	12.09	36.6	29.7	52.35	52.2
29.9	5.32	48.2	30.2	26.33	57.6	30.4	55.25	48.6	30.6	12.35	36.8	30.7	53.45	52.4
30.9	5.84	47.9	31.2	25.98	57.4	31.4	54.74	48.8	31.6	12.58	37.1	31.7	54.50	52.6
31.9	6.38	47.6	32.2	25.64	57.2	32.4	54.23	49.0	32.6	12.80	37.3	32.7	55.48	52.8

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	<i>a</i> Ursæ Min. (<i>Polaris</i>).		Mean Solar Date.	51 Cephei (Hev.).		Mean Solar Date.	6 Ursæ Min. (B.).		Mean Solar Date.	<i>δ</i> Ursæ Min.		Mean Solar Date.	<i>λ</i> Ursæ Min.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
May	h m 1 25	° +88 48	May	h m 6 57	° +87 11	May	h m 12 14	° +88 12	May	h m 18 2	° +86 36	May	h m 19 13	° +88 59
	s	"		s	"		s	"		s	"		s	"
1.9	6.38	47.6	1.2	25.98	57.4	1.4	54.74	48.8	1.6	12.58	37.1	1.7	54.50	52.6
2.9	6.93	47.3	2.2	25.64	57.2	2.4	54.23	49.0	2.6	12.80	37.3	2.7	55.48	52.8
3.9	7.46	47.1	3.2	25.33	57.0	3.4	53.73	49.2	3.6	13.00	37.6	3.7	56.39	53.0
4.9	7.96	46.9	4.2	25.03	56.9	4.4	53.26	49.3	4.6	13.20	37.8	4.7	57.26	53.1
5.9	8.40	46.6	5.2	24.75	56.7	5.4	52.83	49.5	5.6	13.40	38.0	5.7	58.12	53.3
6.9	8.82	46.4	6.2	24.47	56.5	6.4	52.42	49.7	6.6	13.60	38.2	6.7	59.00	53.4
7.9	9.23	46.2	7.2	24.18	56.4	7.4	52.02	49.9	7.6	13.82	38.4	7.7	59.91	53.6
8.9	9.63	45.9	8.2	23.87	56.2	8.4	51.61	50.1	8.6	14.05	38.6	8.7	60.86	53.7
9.9	10.06	45.7	9.2	23.55	56.1	9.4	51.19	50.3	9.6	14.28	38.9	9.7	61.86	53.9
10.9	10.56	45.4	10.2	23.22	55.9	10.4	50.74	50.5	10.6	14.53	39.1	10.7	62.90	54.0
11.9	11.12	45.1	11.2	22.87	55.7	11.4	50.23	50.7	11.6	14.77	39.4	11.7	63.94	54.2
12.9	11.76	44.8	12.2	22.53	55.5	12.4	49.68	50.9	12.6	14.99	39.7	12.7	64.96	54.4
13.9	12.46	44.6	13.1	22.20	55.3	13.4	49.10	51.1	13.6	15.19	40.0	13.7	65.95	54.6
14.9	13.21	44.3	14.1	21.90	55.1	14.4	48.49	51.3	14.6	15.38	40.3	14.7	66.86	54.8
15.9	13.99	44.1	15.1	21.63	54.8	15.4	47.88	51.4	15.6	15.54	40.6	15.7	67.68	55.1
16.9	14.76	43.9	16.1	21.39	54.6	16.4	47.27	51.6	16.6	15.67	40.9	16.7	68.43	55.3
17.9	15.50	43.7	17.1	21.17	54.3	17.4	46.68	51.7	17.6	15.78	41.2	17.6	69.11	55.6
18.9	16.20	43.6	18.1	20.98	54.1	18.4	46.12	51.8	18.6	15.89	41.4	18.6	69.73	55.8
19.9	16.85	43.4	19.1	20.79	53.8	19.4	45.60	51.9	19.6	15.99	41.7	19.6	70.34	56.0
20.9	17.47	43.2	20.1	20.60	53.6	20.4	45.10	52.0	20.6	16.10	41.9	20.6	70.97	56.2
21.9	18.08	43.0	21.1	20.40	53.4	21.3	44.61	52.2	21.6	16.23	42.2	21.6	71.63	56.4
22.9	18.71	42.8	22.1	20.19	53.2	22.3	44.11	52.3	22.6	16.37	42.4	22.6	72.33	56.6
23.9	19.37	42.6	23.1	19.96	53.0	23.3	43.60	52.5	23.6	16.51	42.7	23.6	73.08	56.8
24.9	20.09	42.4	24.1	19.72	52.8	24.3	43.05	52.6	24.6	16.66	43.0	24.6	73.86	57.1
25.9	20.88	42.2	25.1	19.48	52.6	25.3	42.45	52.8	25.6	16.80	43.3	25.6	74.65	57.3
26.9	21.73	42.0	26.1	19.24	52.3	26.3	41.81	52.9	26.6	16.93	43.6	26.6	75.42	57.6
27.9	22.62	41.8	27.1	19.02	52.0	27.3	41.14	53.0	27.6	17.05	43.9	27.6	76.14	57.8
28.9	23.56	41.6	28.1	18.82	51.7	28.3	40.45	53.1	28.6	17.14	44.3	28.6	76.80	58.1
29.9	24.50	41.5	29.1	18.64	51.4	29.3	39.76	53.2	29.6	17.20	44.6	29.6	77.38	58.4
30.9	25.41	41.3	30.1	18.49	51.1	30.3	39.09	53.2	30.6	17.25	44.9	30.6	77.88	58.7
31.9	26.30	41.2	31.1	18.36	50.8	31.3	38.45	53.3	31.6	17.29	45.2	31.6	78.32	59.0
32.9	27.14	41.1	32.1	18.25	50.6	32.3	37.84	53.3	32.6	17.31	45.5	32.6	78.72	59.3

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

α Ursæ Min. (Polaris).			51 Cephei (Hæv.).			6 Ursæ Min. (B.).			δ Ursæ Min.			λ Ursæ Min.		
Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.
June	h m 1 25	° +88 48	June	h m 6 57	° +87 11	June	h m 12 14	° +88 12	June	h m 18 2	° +86 36	June	h m 19 14	° +88 59
	s	"		s	"		s	"		s	"		s	"
1.9	27.14	41.1	1.1	18.25	50.6	1.3	37.84	53.3	1.6	17.31	45.5	1.6	18.72	59.3
2.9	27.93	41.0	2.1	18.15	50.3	2.3	37.27	53.4	2.6	17.35	45.8	2.6	19.14	59.6
3.9	28.69	40.8	3.1	18.04	50.1	3.3	36.72	53.4	3.6	17.39	46.1	3.6	19.57	59.8
4.9	29.42	40.7	4.1	17.91	49.8	4.3	36.17	53.4	4.6	17.44	46.3	4.6	20.03	60.1
5.9	30.19	40.6	5.1	17.77	49.6	5.3	35.61	53.5	5.5	17.52	46.6	5.6	20.54	60.3
6.9	31.00	40.4	6.1	17.61	49.3	6.3	35.04	53.5	6.5	17.59	46.9	6.6	21.09	60.6
7.8	31.87	40.3	7.1	17.45	49.1	7.3	34.43	53.6	7.5	17.66	47.2	7.6	21.66	60.8
8.8	32.81	40.1	8.1	17.30	48.8	8.3	33.77	53.6	8.5	17.73	47.5	8.6	22.21	61.1
9.8	33.81	40.0	9.1	17.16	48.5	9.3	33.08	53.7	9.5	17.77	47.9	9.6	22.71	61.4
10.8	34.85	39.9	10.1	17.04	48.2	10.3	32.36	53.7	10.5	17.79	48.2	10.6	23.16	61.7
11.8	35.91	39.8	11.1	16.94	47.8	11.3	31.63	53.8	11.5	17.78	48.6	11.6	23.53	62.1
12.8	36.98	39.7	12.1	16.88	47.5	12.3	30.91	53.8	12.5	17.75	48.9	12.6	23.80	62.4
13.8	38.02	39.6	13.1	16.85	47.2	13.3	30.22	53.7	13.5	17.70	49.2	13.6	23.98	62.7
14.8	39.01	39.6	14.1	16.83	46.9	14.3	29.55	53.7	14.5	17.63	49.6	14.6	24.11	63.0
15.8	39.96	39.6	15.1	16.84	46.6	15.3	28.92	53.7	15.5	17.57	49.9	15.6	24.21	63.3
16.8	40.85	39.5	16.1	16.85	46.3	16.3	28.34	53.6	16.5	17.50	50.2	16.6	24.31	63.6
17.8	41.73	39.5	17.1	16.86	46.0	17.3	27.77	53.6	17.5	17.44	50.4	17.6	24.42	63.9
18.8	42.59	39.4	18.0	16.85	45.7	18.3	27.20	53.6	18.5	17.40	50.7	18.6	24.57	64.2
19.8	43.47	39.4	19.0	16.83	45.5	19.3	26.62	53.6	19.5	17.37	51.0	19.6	24.77	64.5
20.8	44.40	39.3	20.0	16.80	45.2	20.3	26.03	53.6	20.5	17.33	51.3	20.6	24.99	64.7
21.8	45.38	39.2	21.0	16.74	44.9	21.3	25.39	53.6	21.5	17.31	51.6	21.6	25.23	65.0
22.8	46.43	39.1	22.0	16.70	44.6	22.3	24.72	53.5	22.5	17.28	51.9	22.6	25.47	65.3
23.8	47.52	39.1	23.0	16.67	44.3	23.3	24.02	53.5	23.5	17.22	52.3	23.5	25.67	65.7
24.8	48.65	39.1	24.0	16.67	44.0	24.3	23.30	53.5	24.5	17.14	52.6	24.5	25.80	66.0
25.8	49.80	39.0	25.0	16.69	43.6	25.3	22.58	53.4	25.5	17.04	53.0	25.5	25.85	66.4
26.8	50.92	39.0	26.0	16.73	43.3	26.3	21.87	53.3	26.5	16.92	53.3	26.5	25.82	66.7
27.8	52.00	39.1	27.0	16.80	42.9	27.2	21.18	53.2	27.5	16.78	53.6	27.5	25.72	67.1
28.8	53.04	39.1	28.0	16.89	42.6	28.2	20.54	53.1	28.5	16.63	53.9	28.5	25.57	67.4
29.8	54.01	39.1	29.0	16.99	42.3	29.2	19.93	52.9	29.5	16.49	54.2	29.5	25.41	67.7
30.8	54.95	39.2	30.0	17.10	42.0	30.2	19.36	52.8	30.5	16.35	54.5	30.5	25.26	68.0
31.8	55.85	39.2	31.0	17.18	41.8	31.2	18.81	52.7	31.5	16.23	54.7	31.5	25.14	68.3

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	51 Cephei (Hev.).		Mean Solar Date.	6 Ursæ Min. (B.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
July	h m	°	July	h m	°	July	h m	°	July	h m	°	July	h m	°
	1 25	+88 48		6 57	+87 11		12 14	+88 12		18 2	+86 36		19 14	+89 0
	s	"		s	"		s	"		s	"		s	"
1.8	55.85	39.2	1.0	17.18	41.8	1.2	18.81	52.7	1.5	16.23	54.7	1.5	25.14	8.3
2.8	56.75	39.2	2.0	17.27	41.5	2.2	18.26	52.6	2.5	16.12	55.0	2.5	25.05	8.6
3.8	57.68	39.2	3.0	17.34	41.2	3.2	17.70	52.5	3.5	16.03	55.3	3.5	25.01	8.9
4.8	58.65	39.2	4.0	17.39	40.9	4.2	17.12	52.4	4.5	15.93	55.5	4.5	25.00	9.2
5.8	59.69	39.2	4.9	17.43	40.6	5.2	16.50	52.3	5.5	15.82	55.8	5.5	24.99	9.5
6.8	60.77	39.2	5.9	17.49	40.3	6.2	15.84	52.2	6.5	15.70	56.1	6.5	24.94	9.8
7.8	61.90	39.2	6.9	17.57	40.0	7.2	15.16	52.1	7.5	15.56	56.5	7.5	24.84	10.2
8.8	63.07	39.2	7.9	17.67	39.7	8.2	14.46	52.0	8.5	15.39	56.8	8.5	24.67	10.5
9.8	64.24	39.3	8.9	17.80	39.3	9.2	13.77	51.8	9.5	15.20	57.1	9.5	24.40	10.9
10.8	65.37	39.4	9.9	17.97	39.0	10.2	13.11	51.6	10.5	14.99	57.4	10.5	24.04	11.2
11.8	66.47	39.5	10.9	18.16	38.6	11.2	12.48	51.5	11.5	14.75	57.7	11.5	23.61	11.6
12.8	67.51	39.6	11.9	18.36	38.3	12.2	11.88	51.3	12.4	14.51	58.0	12.5	23.13	11.9
13.8	68.50	39.7	12.9	18.58	38.0	13.2	11.33	51.1	13.4	14.28	58.3	13.5	22.64	12.2
14.8	69.45	39.8	13.9	18.79	37.8	14.2	10.81	50.9	14.4	14.06	58.5	14.5	22.16	12.5
15.7	70.36	39.9	14.9	18.99	37.5	15.2	10.30	50.7	15.4	13.84	58.7	15.5	21.72	12.8
16.7	71.28	40.0	15.9	19.17	37.2	16.2	9.80	50.6	16.4	13.64	59.0	16.5	21.32	13.0
17.7	72.23	40.1	16.9	19.34	37.0	17.2	9.28	50.4	17.4	13.46	59.2	17.5	20.97	13.3
18.7	73.21	40.2	17.9	19.51	36.7	18.2	8.74	50.3	18.4	13.27	59.5	18.5	20.63	13.6
19.7	74.26	40.2	18.9	19.67	36.4	19.2	8.16	50.1	19.4	13.07	59.8	19.5	20.29	13.9
20.7	75.36	40.3	19.9	19.84	36.1	20.2	7.55	50.0	20.4	12.86	60.0	20.5	19.93	14.2
21.7	76.49	40.4	20.9	20.03	35.8	21.2	6.92	49.8	21.4	12.63	60.3	21.5	19.52	14.6
22.7	77.63	40.6	21.9	20.24	35.5	22.2	6.29	49.6	22.4	12.37	60.6	22.5	19.04	14.9
23.7	78.76	40.7	22.9	20.48	35.1	23.2	5.66	49.3	23.4	12.10	60.9	23.5	18.46	15.3
24.7	79.85	40.9	23.9	20.73	34.8	24.2	5.06	49.1	24.4	11.81	61.2	24.5	17.80	15.6
25.7	80.89	41.0	24.9	21.01	34.5	25.2	4.51	48.8	25.4	11.51	61.5	25.5	17.10	15.9
26.7	81.87	41.2	25.9	21.32	34.2	26.2	4.00	48.6	26.4	11.21	61.7	26.5	16.38	16.2
27.7	82.78	41.4	26.9	21.62	34.0	27.2	3.53	48.3	27.4	10.92	61.9	27.5	15.66	16.5
28.7	83.65	41.6	27.9	21.90	33.7	28.2	3.09	48.0	28.4	10.63	62.1	28.5	14.96	16.8
29.7	84.51	41.7	28.9	22.18	33.5	29.2	2.66	47.8	29.4	10.37	62.3	29.5	14.30	17.1
30.7	85.37	41.9	29.9	22.44	33.2	30.2	2.23	47.5	30.4	10.12	62.5	30.4	13.69	17.3
31.7	86.27	42.0	30.9	22.69	33.0	31.2	1.79	47.3	31.4	9.87	62.7	31.4	13.12	17.6
32.7	87.22	42.1	31.9	22.93	32.7	32.1	1.32	47.1	32.4	9.62	62.9	32.4	12.56	17.9

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	51 Cephei (Hæv.).		Mean Solar Date.	6 Ursæ Min. (B.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Aug.	h m 1 26	° ' 48	Aug.	h m 6 57	° ' 11	Aug.	h m 12 13	° ' 12	Aug.	h m 18 1	° ' 37	Aug.	h m 19 13	° ' 0
	s	"		s	"		s	"		s	"		s	"
1.7	27.22	42.1	1.9	23.17	32.5	1.1	61.32	47.1	1.4	69.62	2.9	1.4	72.56	17.9
2.7	28.21	42.3	2.9	23.42	32.2	2.1	60.81	46.9	2.4	69.37	3.2	2.4	71.98	18.2
3.7	29.26	42.4	3.9	23.70	31.9	3.1	60.28	46.6	3.4	69.09	3.4	3.4	71.36	18.5
4.7	30.34	42.6	4.9	24.00	31.6	4.1	59.73	46.4	4.4	68.79	3.7	4.4	70.67	18.8
5.7	31.42	42.8	5.9	24.32	31.3	5.1	59.18	46.1	5.4	68.47	3.9	5.4	69.90	19.1
6.7	32.48	43.0	6.9	24.69	31.0	6.1	58.65	45.8	6.4	68.13	4.2	6.4	69.04	19.4
7.7	33.50	43.2	7.9	25.07	30.7	7.1	58.16	45.5	7.4	67.77	4.4	7.4	68.10	19.7
8.7	34.46	43.5	8.9	25.47	30.4	8.1	57.70	45.2	8.4	67.39	4.6	8.4	67.12	20.0
9.7	35.35	43.8	9.9	25.86	30.2	9.1	57.28	44.9	9.4	67.02	4.8	9.4	66.11	20.3
10.7	36.19	44.0	10.9	26.24	30.0	10.1	56.92	44.6	10.4	66.66	4.9	10.4	65.10	20.6
11.7	36.99	44.2	11.9	26.61	29.8	11.1	56.58	44.3	11.4	66.31	5.1	11.4	64.12	20.8
12.7	37.78	44.5	12.9	26.96	29.6	12.1	56.25	44.0	12.4	65.97	5.2	12.4	63.19	21.0
13.7	38.58	44.7	13.9	27.30	29.4	13.1	55.92	43.7	13.4	65.64	5.3	13.4	62.30	21.3
14.7	39.41	44.9	14.9	27.63	29.1	14.1	55.56	43.5	14.4	65.32	5.5	14.4	61.44	21.5
15.7	40.28	45.1	15.9	27.96	28.9	15.1	55.17	43.2	15.4	65.01	5.7	15.4	60.60	21.7
16.7	41.20	45.3	16.9	28.30	28.6	16.1	54.76	42.9	16.4	64.68	5.9	16.4	59.76	22.0
17.7	42.17	45.6	17.9	28.66	28.4	17.1	54.33	42.6	17.3	64.34	6.1	17.4	58.87	22.3
18.7	43.14	45.8	18.9	29.05	28.1	18.1	53.88	42.3	18.3	63.98	6.3	18.4	57.91	22.6
19.6	44.11	46.0	19.9	29.47	27.9	19.1	53.43	42.0	19.3	63.60	6.5	19.4	56.88	22.9
20.6	45.05	46.3	20.9	29.90	27.6	20.1	53.01	41.7	20.3	63.20	6.7	20.4	55.78	23.1
21.6	45.93	46.6	21.9	30.35	27.4	21.1	52.64	41.3	21.3	62.79	6.8	21.4	54.62	23.4
22.6	46.75	46.9	22.9	30.81	27.2	22.1	52.31	41.0	22.3	62.38	7.0	22.4	53.42	23.6
23.6	47.50	47.2	23.9	31.26	27.0	23.1	52.02	40.6	23.3	61.97	7.1	23.4	52.23	23.9
24.6	48.20	47.5	24.9	31.69	26.8	24.1	51.77	40.2	24.3	61.58	7.2	24.4	51.05	24.1
25.6	48.85	47.8	25.9	32.10	26.7	25.1	51.55	39.9	25.3	61.20	7.3	25.4	49.92	24.3
26.6	49.50	48.1	26.9	32.50	26.5	26.1	51.33	39.5	26.3	60.83	7.4	26.4	48.83	24.5
27.6	50.18	48.4	27.9	32.89	26.3	27.1	51.11	39.2	27.3	60.48	7.5	27.4	47.79	24.7
28.6	50.88	48.6	28.9	33.28	26.2	28.1	50.86	38.9	28.3	60.14	7.6	28.4	46.78	24.9
29.6	51.63	48.8	29.9	33.66	26.0	29.1	50.57	38.6	29.3	59.78	7.7	29.4	45.77	25.1
30.6	52.43	49.1	30.8	34.06	25.8	30.1	50.27	38.3	30.3	59.42	7.8	30.4	44.72	25.3
31.6	53.26	49.4	31.8	34.49	25.5	31.1	49.95	37.9	31.3	59.04	8.0	31.4	43.64	25.5
32.6	54.11	49.7	32.8	34.94	25.3	32.1	49.63	37.6	32.3	58.64	8.1	32.4	42.49	25.8

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	<i>α</i> Ursæ Min. (Polaris).		Mean Solar Date.	51 Cephei (Hæv.).		Mean Solar Date.	6 Ursæ Min. (B.).		Mean Solar Date.	<i>δ</i> Ursæ Min.		Mean Solar Date.	<i>λ</i> Ursæ Min.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Sept.	h m 1 26	° +88 48	Sept.	h m 6 57	° +87 11	Sept.	h m 12 13	° +88 12	Sept.	h m 18 1	° +86 37	Sept.	h m 19 12	° +89 0
	s	"		s	"		s	"		s	"		s	"
1.6	54.11	49.7	1.8	34.94	25.3	1.1	49.63	37.6	1.3	58.64	8.1	1.4	102.49	25.8
2.6	54.94	50.0	2.8	35.44	25.1	2.1	49.32	37.2	2.3	58.22	8.2	2.4	101.26	26.0
3.6	55.72	50.4	3.8	35.94	24.9	3.1	49.04	36.8	3.3	57.78	8.3	3.4	99.93	26.2
4.6	56.45	50.7	4.8	36.46	24.8	4.1	48.79	36.4	4.3	57.32	8.4	4.4	98.55	26.4
5.6	57.11	51.0	5.8	36.99	24.6	5.1	48.60	36.0	5.3	56.86	8.5	5.3	97.15	26.6
6.6	57.71	51.4	6.8	37.50	24.5	6.0	48.45	35.6	6.3	56.42	8.6	6.3	95.75	26.8
7.6	58.25	51.7	7.8	38.00	24.3	7.0	48.33	35.3	7.3	55.98	8.6	7.3	94.37	27.0
8.6	58.77	52.1	8.8	38.48	24.2	8.0	48.23	34.9	8.3	55.56	8.6	8.3	93.04	27.1
9.6	59.28	52.4	9.8	38.95	24.1	9.0	48.14	34.6	9.3	55.16	8.7	9.3	91.76	27.2
10.6	59.81	52.7	10.8	39.40	24.0	10.0	48.04	34.2	10.3	54.76	8.7	10.3	90.52	27.4
11.6	60.38	53.0	11.8	39.84	23.9	11.0	47.91	33.9	11.3	54.37	8.7	11.3	89.31	27.5
12.6	61.00	53.3	12.8	40.30	23.7	12.0	47.76	33.6	12.3	53.99	8.8	12.3	88.10	27.7
13.6	61.66	53.6	13.8	40.77	23.6	13.0	47.57	33.2	13.3	53.59	8.9	13.3	86.87	27.9
14.6	62.34	54.0	14.8	41.26	23.4	14.0	47.37	32.9	14.3	53.18	9.0	14.3	85.59	28.0
15.6	63.01	54.3	15.8	41.77	23.2	15.0	47.18	32.5	15.3	52.74	9.0	15.3	84.24	28.2
16.6	63.66	54.7	16.8	42.29	23.1	16.0	47.00	32.1	16.3	52.29	9.1	16.3	82.84	28.4
17.6	64.25	55.0	17.8	42.84	22.9	17.0	46.86	31.7	17.3	51.82	9.1	17.3	81.38	28.6
18.6	64.78	55.4	18.8	43.40	22.8	18.0	46.77	31.2	18.3	51.35	9.2	18.3	79.87	28.7
19.6	65.24	55.8	19.8	43.95	22.8	19.0	46.73	30.8	19.3	50.89	9.2	19.3	78.35	28.9
20.6	65.63	56.2	20.8	44.48	22.7	20.0	46.73	30.4	20.3	50.45	9.1	20.3	76.86	29.0
21.6	65.98	56.6	21.8	44.99	22.6	21.0	46.76	30.0	21.3	50.01	9.1	21.3	75.41	29.1
22.6	66.30	56.9	22.8	45.49	22.6	22.0	46.81	29.6	22.3	49.60	9.1	22.3	74.01	29.1
23.6	66.62	57.2	23.8	45.97	22.5	23.0	46.86	29.2	23.2	49.21	9.0	23.3	72.67	29.2
24.6	66.98	57.6	24.8	46.44	22.4	24.0	46.89	28.9	24.2	48.82	9.0	24.3	71.38	29.3
25.5	67.37	57.9	25.8	46.90	22.4	25.0	46.88	28.5	25.2	48.44	9.0	25.3	70.10	29.4
26.5	67.80	58.2	26.8	47.37	22.3	26.0	46.85	28.2	26.2	48.04	9.0	26.3	68.82	29.5
27.5	68.26	58.6	27.8	47.87	22.2	26.9	46.80	27.8	27.2	47.64	9.0	27.3	67.50	29.6
28.5	68.74	58.9	28.8	48.38	22.1	27.9	46.74	27.4	28.2	47.22	9.0	28.3	66.12	29.7
29.5	69.21	59.3	29.8	48.92	22.0	28.9	46.69	27.0	29.2	46.78	9.0	29.3	64.68	29.8
30.5	69.66	59.7	30.8	49.49	21.9	29.9	46.66	26.6	30.2	46.32	9.0	30.3	63.16	30.0
31.5	70.05	60.1	31.8	50.07	21.8	30.9	46.68	26.2	31.2	45.85	9.0	31.3	61.59	30.1
32.5	70.37	60.5	32.8	50.65	21.8	31.9	46.75	25.8	32.2	45.37	8.9	32.3	59.97	30.2

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	51 Cephei (Hæv.).		Mean Solar Date.	6 Ursæ Min. (B.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Oct.	h m	° '	Oct.	h m	° '	Oct.	h m	° '	Oct.	h m	° '	Oct.	h m	° '
	1 27	+88 49		6 57	+87 11		12 13	+88 12		18 1	+86 37		19 12	+89 0
	s	"		s	"		s	"		s	"		s	"
1.5	10.05	0.1	1.8	50.07	21.8	1.9	46.75	25.8	1.2	45.85	9.0	1.3	61.59	30.1
2.5	10.37	0.5	2.8	50.65	21.8	2.9	46.85	25.4	2.2	45.37	8.9	2.3	59.97	30.2
3.5	10.62	0.9	3.8	51.23	21.8	3.9	47.01	25.0	3.2	44.90	8.8	3.3	58.35	30.2
4.5	10.81	1.3	4.8	51.79	21.8	4.9	47.19	24.6	4.2	44.44	8.7	4.3	56.76	30.3
5.5	10.95	1.7	5.8	52.34	21.8	5.9	47.38	24.2	5.2	44.01	8.6	5.3	55.22	30.3
6.5	11.07	2.1	6.8	52.86	21.8	6.9	47.57	23.8	6.2	43.59	8.5	6.3	53.73	30.3
7.5	11.21	2.5	7.7	53.36	21.8	7.9	47.74	23.5	7.2	43.19	8.4	7.3	52.30	30.3
8.5	11.39	2.8	8.7	53.85	21.8	8.9	47.87	23.2	8.2	42.81	8.3	8.3	50.91	30.3
9.5	11.59	3.2	9.7	54.34	21.8	9.9	47.98	22.8	9.2	42.42	8.2	9.3	49.55	30.3
10.5	11.83	3.6	10.7	54.84	21.7	10.9	48.07	22.4	10.2	42.02	8.2	10.3	48.17	30.4
11.5	12.10	3.9	11.7	55.35	21.7	11.9	48.15	22.1	11.2	41.61	8.1	11.3	46.77	30.4
12.5	12.38	4.3	12.7	55.89	21.7	12.9	48.25	21.7	12.2	41.19	8.1	12.2	45.32	30.5
13.5	12.65	4.7	13.7	56.44	21.6	13.9	48.38	21.3	13.2	40.75	8.0	13.2	43.81	30.5
14.5	12.86	5.1	14.7	57.01	21.6	14.9	48.55	20.8	14.2	40.31	7.9	14.2	42.25	30.6
15.5	13.02	5.5	15.7	57.58	21.6	15.9	48.77	20.4	15.2	39.86	7.8	15.2	40.64	30.6
16.5	13.09	5.9	16.7	58.16	21.7	16.9	49.04	20.0	16.2	39.42	7.7	16.2	39.01	30.6
17.5	13.09	6.3	17.7	58.73	21.8	17.9	49.35	19.6	17.2	38.98	7.5	17.2	37.41	30.6
18.5	13.03	6.7	18.7	59.27	21.8	18.9	49.67	19.3	18.2	38.56	7.3	18.2	35.86	30.6
19.5	12.92	7.1	19.7	59.78	21.9	19.9	50.00	18.9	19.2	38.17	7.2	19.2	34.37	30.5
20.5	12.82	7.5	20.7	60.28	22.0	20.9	50.32	18.5	20.2	37.80	7.0	20.2	32.94	30.5
21.5	12.73	7.8	21.7	60.77	22.0	21.9	50.61	18.2	21.2	37.44	6.8	21.2	31.57	30.4
22.5	12.66	8.2	22.7	61.24	22.1	22.9	50.87	17.9	22.2	37.08	6.7	22.2	30.24	30.3
23.5	12.65	8.5	23.7	61.72	22.1	23.9	51.11	17.5	23.2	36.74	6.5	23.2	28.93	30.3
24.5	12.67	8.9	24.7	62.21	22.2	24.9	51.33	17.2	24.2	36.39	6.4	24.2	27.59	30.3
25.5	12.72	9.2	25.7	62.71	22.2	25.9	51.57	16.8	25.2	36.01	6.3	25.2	26.21	30.2
26.5	12.76	9.6	26.7	63.23	22.2	26.9	51.82	16.4	26.2	35.61	6.2	26.2	24.79	30.2
27.5	12.78	10.0	27.7	63.78	22.3	27.9	52.10	16.1	27.2	35.21	6.0	27.2	23.29	30.2
28.5	12.75	10.4	28.7	64.35	22.3	28.9	52.42	15.7	28.2	34.79	5.9	28.2	21.73	30.2
29.5	12.66	10.8	29.7	64.92	22.4	29.9	52.79	15.3	29.1	34.38	5.7	29.2	20.13	30.1
30.5	12.48	11.3	30.7	65.48	22.5	30.9	53.21	14.9	30.1	33.97	5.5	30.2	18.54	30.1
31.5	12.24	11.7	31.7	66.02	22.7	31.9	53.67	14.6	31.1	33.57	5.3	31.2	16.97	30.0
32.4	11.96	12.1	32.7	66.54	22.8	32.9	54.13	14.2	32.1	33.18	5.0	32.2	15.44	29.9

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	51 Cephei (Hrv.).		Mean Solar Date.	6 Ursæ Min. (B.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Nov.	h m	° '	Nov.	h m	° '	Nov.	h m	° '	Nov.	h m	° '	Nov.	h m	° '
	1 26	+88 49		6 58	+87 11		12 13	+88 12		18 1	+86 36		19 11	+89 0
	s	"		s	"		s	"		s	"		s	"
1.4	71.96	12.1	1.7	6.54	22.8	1.9	54.13	14.2	1.1	33.18	65.0	1.2	75.44	29.9
2.4	71.64	12.5	2.7	7.04	23.0	2.9	54.59	13.9	2.1	32.82	64.8	2.2	73.98	29.7
3.4	71.32	12.8	3.7	7.52	23.1	3.9	55.04	13.6	3.1	32.49	64.6	3.2	72.59	29.6
4.4	71.03	13.2	4.7	7.98	23.2	4.9	55.47	13.3	4.1	32.16	64.3	4.2	71.26	29.5
5.4	70.76	13.5	5.7	8.43	23.3	5.9	55.87	13.0	5.1	31.84	64.1	5.2	69.96	29.4
6.4	70.53	13.8	6.7	8.89	23.4	6.9	56.24	12.7	6.1	31.53	63.9	6.2	68.68	29.3
7.4	70.34	14.2	7.7	9.35	23.5	7.9	56.60	12.4	7.1	31.20	63.7	7.2	67.40	29.2
8.4	70.16	14.5	8.7	9.83	23.6	8.9	56.97	12.1	8.1	30.87	63.5	8.2	66.08	29.1
9.4	69.98	14.9	9.7	10.33	23.8	9.9	57.35	11.8	9.1	30.52	63.3	9.2	64.71	29.0
10.4	69.75	15.3	10.7	10.85	23.9	10.9	57.78	11.4	10.1	30.16	63.1	10.2	63.29	28.9
11.4	69.47	15.7	11.6	11.36	24.0	11.9	58.26	11.1	11.1	29.79	62.9	11.2	61.84	28.8
12.4	69.12	16.1	12.6	11.88	24.2	12.9	58.78	10.7	12.1	29.43	62.7	12.2	60.37	28.7
13.4	68.69	16.4	13.6	12.39	24.4	13.9	59.33	10.4	13.1	29.09	62.4	13.2	58.91	28.5
14.4	68.19	16.8	14.6	12.87	24.6	14.9	59.91	10.1	14.1	28.76	62.1	14.2	57.50	28.4
15.4	67.65	17.2	15.6	13.33	24.8	15.9	60.50	9.8	15.1	28.45	61.8	15.2	56.16	28.2
16.4	67.07	17.5	16.6	13.76	25.0	16.9	61.09	9.5	16.1	28.17	61.5	16.2	54.89	28.0
17.4	66.51	17.8	17.6	14.16	25.2	17.9	61.67	9.3	17.1	27.91	61.2	17.1	53.69	27.8
18.4	65.98	18.1	18.6	14.55	25.4	18.9	62.20	9.0	18.1	27.67	60.9	18.1	52.55	27.6
19.4	65.49	18.4	19.6	14.94	25.6	19.8	62.71	8.8	19.1	27.43	60.7	19.1	51.45	27.4
20.4	65.04	18.7	20.6	15.33	25.7	20.8	63.20	8.5	20.1	27.18	60.4	20.1	50.35	27.2
21.4	64.61	19.0	21.6	15.74	25.9	21.8	63.67	8.2	21.1	26.93	60.2	21.1	49.23	27.0
22.4	64.20	19.4	22.6	16.15	26.0	22.8	64.16	8.0	22.1	26.67	59.9	22.1	48.07	26.9
23.4	63.78	19.7	23.6	16.59	26.2	23.8	64.68	7.7	23.1	26.39	59.7	23.1	46.86	26.7
24.4	63.31	20.0	24.6	17.05	26.4	24.8	65.23	7.4	24.1	26.10	59.4	24.1	45.59	26.6
25.4	62.79	20.4	25.6	17.52	26.6	25.8	65.82	7.1	25.1	25.80	59.2	25.1	44.28	26.4
26.4	62.21	20.7	26.6	17.97	26.8	26.8	66.46	6.8	26.1	25.51	58.9	26.1	42.97	26.2
27.4	61.55	21.1	27.6	18.42	27.1	27.8	67.14	6.6	27.1	25.23	58.5	27.1	41.69	26.0
28.4	60.82	21.4	28.6	18.84	27.4	28.8	67.83	6.4	28.1	24.98	58.2	28.1	40.44	25.7
29.4	60.06	21.7	29.6	19.23	27.6	29.8	68.53	6.2	29.1	24.74	57.8	29.1	39.26	25.5
30.4	59.30	22.0	30.6	19.59	27.9	30.8	69.22	6.0	30.1	24.53	57.5	30.1	38.17	25.2
31.4	58.55	22.3	31.6	19.93	28.1	31.8	69.88	5.8	31.1	24.35	57.2	31.1	37.16	24.9

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

α Ursæ Min. (Polaris).			51 Cephei (Hrv.).			6 Ursæ Min. (B.).			δ Ursæ Min.			λ Ursæ Min.		
Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.
Dec.	h m 1 26	° ' 00 49	Dec.	h m 6 58	° ' 00 11	Dec.	h m 12 14	° ' 00 12	Dec.	h m 18 1	° ' 00 36	Dec.	h m 19 11	° ' 00 89
	s	"		s	"		s	"		s	"		s	"
1.4	58.55	22.3	1.6	19.93	28.1	1.8	9.88	5.8	1.1	24.35	57.2	1.1	37.16	24.9
2.4	57.82	22.5	2.6	20.26	28.4	2.8	10.51	5.6	2.1	24.17	56.8	2.1	36.20	24.7
3.4	57.15	22.8	3.6	20.58	28.6	3.8	11.11	5.4	3.1	24.00	56.5	3.1	35.27	24.4
4.4	56.52	23.0	4.6	20.91	28.8	4.8	11.68	5.3	4.0	23.83	56.2	4.1	34.34	24.2
5.4	55.91	23.3	5.6	21.25	29.1	5.8	12.25	5.1	5.0	23.64	56.0	5.1	33.41	24.0
6.4	55.29	23.6	6.6	21.60	29.3	6.8	12.84	4.9	6.0	23.44	55.7	6.1	32.45	23.8
7.3	54.65	23.9	7.6	21.95	29.5	7.8	13.45	4.6	7.0	23.24	55.4	7.1	31.44	23.6
8.3	53.97	24.1	8.6	22.31	29.8	8.8	14.10	4.4	8.0	23.04	55.1	8.1	30.40	23.3
9.3	53.23	24.4	9.6	22.69	30.0	9.8	14.80	4.2	9.0	22.83	54.8	9.1	29.34	23.1
10.3	52.41	24.7	10.6	23.05	30.3	10.8	15.54	4.0	10.0	22.64	54.4	10.1	28.29	22.8
11.3	51.53	25.0	11.6	23.38	30.6	11.8	16.31	3.8	11.0	22.46	54.1	11.1	27.28	22.5
12.3	50.59	25.3	12.6	23.68	30.9	12.8	17.08	3.7	12.0	22.31	53.7	12.1	26.34	22.2
13.3	49.63	25.5	13.6	23.96	31.2	13.8	17.85	3.5	13.0	22.19	53.3	13.1	25.47	21.9
14.3	48.66	25.7	14.6	24.22	31.6	14.8	18.61	3.4	14.0	22.09	52.9	14.1	24.70	21.6
15.3	47.71	25.9	15.6	24.45	31.9	15.8	19.33	3.3	15.0	22.01	52.6	15.1	24.01	21.3
16.3	46.81	26.1	16.6	24.66	32.2	16.8	20.01	3.2	16.0	21.93	52.2	16.1	23.37	21.0
17.3	45.95	26.3	17.6	24.86	32.4	17.8	20.66	3.1	17.0	21.86	51.9	17.1	22.76	20.7
18.3	45.14	26.4	18.6	25.08	32.7	18.8	21.29	3.0	18.0	21.79	51.6	18.1	22.15	20.4
19.3	44.35	26.6	19.5	25.32	33.0	19.8	21.93	2.9	19.0	21.71	51.3	19.1	21.50	20.2
20.3	43.56	26.8	20.5	25.57	33.2	20.8	22.58	2.7	20.0	21.61	51.0	20.1	20.82	19.9
21.3	42.74	27.1	21.5	25.83	33.5	21.8	23.26	2.6	21.0	21.50	50.7	21.1	20.09	19.6
22.3	41.87	27.3	22.5	26.10	33.8	22.8	23.97	2.5	21.9	21.40	50.3	22.1	19.32	19.4
23.3	40.95	27.5	23.5	26.36	34.1	23.8	24.73	2.4	22.9	21.29	50.0	23.0	18.55	19.1
24.3	39.97	27.7	24.5	26.61	34.4	24.8	25.53	2.3	23.9	21.18	49.6	24.0	17.80	18.8
25.3	38.92	27.9	25.5	26.85	34.8	25.7	26.34	2.2	24.9	21.10	49.2	25.0	17.08	18.4
26.3	37.84	28.1	26.5	27.06	35.1	26.7	27.15	2.1	25.9	21.04	48.8	26.0	16.42	18.1
27.3	36.74	28.3	27.5	27.23	35.5	27.7	27.95	2.1	26.9	21.01	48.4	27.0	15.86	17.7
28.3	35.65	28.4	28.5	27.37	35.8	28.7	28.72	2.1	27.9	21.00	48.1	28.0	15.39	17.4
29.3	34.61	28.5	29.5	27.49	36.1	29.7	29.46	2.1	28.9	21.01	47.7	29.0	14.98	17.0
30.3	33.60	28.6	30.5	27.60	36.4	30.7	30.17	2.1	29.9	21.03	47.4	30.0	14.62	16.7
31.3	32.64	28.7	31.5	27.72	36.7	31.7	30.85	2.0	30.9	21.05	47.0	31.0	14.29	16.4
32.3	31.72	28.8	32.5	27.84	37.0	32.7	31.51	2.0	31.9	21.07	46.7	32.0	13.96	16.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Data.	33 Piscium.		α Andromedæ.		β Cassiopeïæ.		22 Andromedæ.		γ Pegasi. (Algenib.)	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m ° ' "	° ' "	h m ° ' "	° ' "	h m ° ' "	° ' "	h m ° ' "	° ' "	h m ° ' "	° ' "
	0 0	- 6 13	0 3	+28 34	0 4	+58 38	0 5	+45 33	0 8	+14 40
Jan. 0.2	36.38	30.1	36.66	59.0	14.72	42.5	31.06	44.0	28.70	16.9
10.2	36.28	30.6	36.52	58.1	14.39	41.8	30.85	43.2	28.58	16.0
20.2	36.18	31.1	36.38	56.9	14.08	40.5	30.65	41.9	28.46	15.1
30.2	36.09	31.5	36.26	55.5	13.79	38.8	30.46	40.3	28.36	14.1
Feb. 9.1	36.02	31.7	36.15	53.9	13.54	36.7	30.30	38.4	28.27	13.0
19.1	35.97	31.7	36.07	52.3	13.34	34.3	30.17	36.2	28.20	12.0
29.1	35.94	31.5	36.01	50.7	13.20	31.7	30.08	33.9	28.16	11.0
Mar. 10.0	35.94	31.1	36.00	49.1	13.12	28.9	30.04	31.6	28.15	10.2
20.0	35.98	30.5	36.03	47.7	13.12	26.2	30.05	29.4	28.17	9.6
30.0	36.05	29.6	36.10	46.4	13.20	23.6	30.12	27.3	28.24	9.2
Apr. 9.0	36.16	28.5	36.22	45.5	13.36	21.3	30.25	25.5	28.34	9.0
18.9	36.31	27.2	36.38	44.9	13.59	19.3	30.44	24.1	28.49	9.2
28.9	36.50	25.6	36.58	44.7	13.89	17.7	30.68	23.0	28.68	9.6
May 8.9	36.73	23.9	36.83	44.8	14.26	16.5	30.97	22.4	28.91	10.4
18.9	36.99	22.0	37.11	45.4	14.68	15.9	31.30	22.2	29.17	11.5
28.8	37.27	20.0	37.42	46.3	15.14	15.8	31.66	22.6	29.45	12.9
June 7.8	37.57	17.9	37.75	47.6	15.63	16.2	32.05	23.4	29.76	14.5
17.8	37.88	15.8	38.09	49.2	16.13	17.1	32.44	24.6	30.08	16.4
27.7	38.20	13.8	38.43	51.1	16.63	18.5	32.84	26.3	30.40	18.4
July 7.7	38.51	11.9	38.76	53.2	17.12	20.4	33.23	28.3	30.71	20.5
17.7	38.81	10.1	39.08	55.5	17.57	22.7	33.60	30.6	31.01	22.6
27.7	39.09	8.5	39.38	58.0	17.99	25.4	33.94	33.2	31.30	24.8
Aug. 6.6	39.34	7.1	39.64	60.5	18.37	28.3	34.25	36.0	31.55	26.9
16.6	39.56	6.0	39.87	63.0	18.69	31.4	34.51	39.0	31.77	28.9
26.6	39.74	5.1	40.06	65.5	18.95	34.7	34.72	42.0	31.96	30.8
Sept. 5.6	39.89	4.5	40.21	67.9	19.15	38.1	34.89	45.1	32.11	32.5
15.5	39.99	4.2	40.31	70.1	19.29	41.6	35.01	48.1	32.22	34.1
25.5	40.06	4.2	40.38	72.2	19.36	44.9	35.08	51.0	32.29	35.4
Oct. 5.5	40.09	4.4	40.41	74.1	19.37	48.2	35.11	53.7	32.33	36.5
15.5	40.09	4.7	40.41	75.7	19.33	51.3	35.09	56.2	32.33	37.3
25.4	40.06	5.3	40.37	77.1	19.22	54.1	35.03	58.5	32.31	38.0
Nov. 4.4	40.00	5.9	40.30	78.2	19.07	56.6	34.93	60.5	32.26	38.4
14.4	39.93	6.6	40.22	79.0	18.87	58.7	34.80	62.1	32.19	38.5
24.3	39.84	7.4	40.11	79.6	18.63	60.4	34.65	63.3	32.11	38.5
Dec. 4.3	39.74	8.2	39.99	79.8	18.35	61.6	34.47	64.1	32.01	38.3
14.3	39.63	8.9	39.85	79.6	18.05	62.3	34.28	64.4	31.90	37.9
24.3	39.52	9.6	39.71	79.2	17.74	62.5	34.07	64.3	31.78	37.3
34.2	39.42	10.3	39.57	78.5	17.42	62.1	33.86	63.8	31.66	36.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	σ Andromedæ.		ϵ Ceti.		44 Piscium.		β Hydri.		ι Ceti.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.
	h m ° ' "	° ' "	h m ° ' "	° ' "	h m ° ' "	° ' "	h m ° ' "	° ' "	h m ° ' "	° ' "
	0 13	+36 16	0 14	9 19	0 20	+ 1 25	0 20	-77 45	0 25	- 4 27
Jan. 0.2	30.06 s	34.9 s	43.30 s	73.2 s	40.08 s	41.2 s	53.76 s	107.6 s	19.57 s	65.7 s
10.2	29.89 .17	34.1 .8	43.19 .11	73.8 .6	39.97 .11	40.5 .7	52.89 .87	106.6 .10	19.45 .12	66.3 .6
20.2	29.73 .16	32.9 .12	43.08 .11	74.2 .4	39.86 .11	39.8 .7	52.07 .82	105.0 .12	19.34 .11	66.8 .5
30.2	29.58 .15	31.5 .4	42.98 .10	74.5 .3	39.76 .10	39.2 .6	51.34 .73	102.8 .16	19.24 .10	67.3 .5
Feb. 9.1	29.44 .14	29.8 .7	42.90 .08	74.5 .0	39.67 .09	38.7 .5	50.70 .64	100.2 .26	19.15 .09	67.5 .2
	.11	1.8	.07	.1	.07	.4	.52	3.0	.07	.1
19.1	29.33	28.0	42.83	74.4	39.60	38.3	50.18	97.2	19.08	67.6
29.1	29.26 .07	26.1 .9	42.79 .04	74.0 .4	39.56 .04	38.1 .2	49.79 .39	93.9 .3	19.03 .05	67.5 .1
Mar. 10.1	29.22 .04	24.2 .8	42.78 .01	73.4 .6	39.54 .02	38.0 .1	49.55 .24	90.3 .36	19.01 .02	67.2 .3
20.0	29.23 .01	22.4 .1	42.80 .02	72.6 .8	39.55 .01	38.2 .2	49.46 .09	86.5 .38	19.02 .01	66.7 .5
30.0	29.29 .06	20.8 .6	42.86 .06	71.6 .10	39.61 .06	38.6 .4	49.52 .06	82.7 .38	19.07 .05	66.0 .7
	.11	1.4	.10	1.3	.09	.6	.22	3.9	.08	1.0
Apr. 9.0	29.40	19.4	42.96	70.3	39.70	39.2	49.74	78.8	19.15	65.0
18.9	29.56 .16	18.3 .1	43.10 .14	68.8 .5	39.83 .13	40.1 .9	50.12 .38	75.1 .37	19.28 .13	63.7 .3
28.9	29.77 .21	17.7 .6	43.28 .18	67.1 .7	40.01 .18	41.3 .2	50.64 .52	71.5 .36	19.45 .17	62.2 .5
May 8.9	30.03 .26	17.4 .3	43.49 .21	65.2 .9	40.22 .21	42.7 .4	51.31 .67	68.1 .34	19.66 .21	60.6 .1
18.9	30.32 .29	17.6 .2	43.74 .25	63.2 .0	40.46 .24	42.7 .6	52.11 .80	65.1 .30	19.90 .24	58.7 .9
	.33	.6	.28	2.1	.28	1.8	.91	2.6	.27	2.0
28.8	30.65	18.2	44.02	61.1	40.74	46.1	53.02	62.5	20.17	56.7
June 7.8	30.99 .34	19.2 .0	44.32 .30	58.9 .2	41.03 .29	48.0 .9	54.02 .100	60.2 .23	20.46 .29	54.7 .2
17.8	31.35 .36	20.5 .3	44.63 .31	56.8 .1	41.34 .31	50.0 .20	55.09 .107	58.5 .17	20.77 .31	52.6 .1
27.8	31.71 .36	22.3 .8	44.95 .32	54.8 .0	41.65 .31	52.1 .1	56.20 .111	57.4 .1	21.08 .31	50.5 .2
July 7.7	32.07 .36	24.3 .0	45.26 .31	52.9 .9	41.96 .31	54.1 .20	57.33 .113	56.7 .7	21.40 .32	48.5 .0
	.34	2.3	.31	1.8	.30	2.0	1.11	0.0	.30	1.8
17.7	32.41	26.6	45.57	51.1	42.26	56.1	58.44	56.7	21.70	46.7
27.7	32.72 .31	29.1 .5	45.85 .28	49.6 .5	42.55 .29	57.9 .8	59.50 .106	57.2 .5	21.99 .29	45.0 .7
Aug. 6.6	33.00 .28	31.7 .6	46.11 .26	48.3 .3	42.81 .26	59.6 .7	60.49 .99	58.3 .1	22.25 .26	43.5 .5
16.6	33.25 .25	34.4 .7	46.34 .23	47.2 .1	43.04 .23	61.1 .5	61.37 .88	59.9 .16	22.49 .24	42.3 .2
26.6	33.46 .21	37.1 .2	46.54 .20	46.5 .7	43.23 .19	62.3 .2	62.12 .75	61.9 .20	22.69 .20	41.3 .0
	.17	2.7	.16	.4	.16	1.0	.59	2.5	.16	.7
Sept. 5.6	33.63	39.8	46.70	46.1	43.39	63.3	62.71	64.4	22.85	40.6
15.5	33.75 .12	42.4 .6	46.82 .12	46.0 .1	43.52 .13	64.1 .8	63.13 .42	67.2 .28	22.98 .13	40.1 .5
25.5	33.83 .08	44.9 .5	46.90 .08	46.1 .1	43.60 .08	64.6 .5	63.36 .23	70.1 .29	23.07 .09	40.0 .1
Oct. 5.5	33.87 .04	47.2 .3	46.95 .05	46.5 .4	43.65 .05	64.9 .3	63.40 .04	73.2 .31	23.13 .06	40.0 .0
15.5	33.87 .00	49.3 .1	46.96 .01	47.0 .5	43.67 .02	65.0 .1	63.26 .14	76.2 .30	23.15 .02	40.3 .3
	.03	1.8	.02	.7	.01	.1	.32	2.9	.00	.5
25.4	33.84	51.1	46.94	47.7	43.66	64.9	62.94	79.1	23.15	40.8
Nov. 4.4	33.77 .07	52.6 .5	46.89 .05	48.6 .9	43.63 .03	64.6 .3	62.45 .49	81.7 .26	23.11 .04	41.4 .6
14.4	33.68 .09	53.9 .3	46.83 .06	49.5 .9	43.57 .06	64.2 .4	61.82 .63	83.9 .22	23.06 .05	42.1 .7
24.3	33.57 .11	54.8 .9	46.75 .08	50.4 .8	43.49 .08	63.6 .6	61.08 .74	85.7 .12	22.99 .07	42.8 .8
Dec. 4.3	33.43 .14	55.3 .5	46.65 .10	51.2 .8	43.40 .09	63.0 .6	60.25 .83	86.9 .12	22.90 .09	43.6 .8
	.15	.2	.10	.9	.10	.7	.88	.6	.10	
14.3	33.28	55.5	46.55	52.1	43.30	62.3	59.37	87.5	22.80	44.4
24.3	33.12 .16	55.3 .2	46.44 .11	52.8 .7	43.20 .10	61.7 .6	58.46 .91	87.5 .00	22.69 .11	45.1 .7
34.2	32.95 .17	54.7 .6	46.33 .11	53.4 .6	43.09 .11	61.0 .7	57.57 .89	86.8 .7	22.58 .11	45.8 .7

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	π Andromedæ.			α Cassiopeizæ.			β Ceti.			γ Cassiopeizæ.			δ Cassiopeizæ.		
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.	
	h m 0 31	+33 12		h m 0 35	+56 1		h m 0 38	-18 29		h m 0 39	+74 28		h m 0 39	+47 46	
	s	"		s	"		s	"		s	"		s	"	
Jan. 0.3	56.90	50.0	15.98	67.7	57.32	43.6	32.90	79.6	34.80	58.9					
10.2	56.74	49.3	15.68	67.3	57.19	44.1	32.16	79.6	34.58	58.5					
20.2	56.58	48.3	15.39	66.4	57.07	44.4	31.43	79.0	34.35	57.6					
30.2	56.43	47.1	15.11	65.1	56.95	44.4	30.73	77.8	34.13	56.3					
Feb. 9.1	56.29	45.6	14.85	63.3	56.85	44.1	30.08	76.1	33.93	54.6					
19.1	56.17	44.0	14.62	61.2	56.76	43.5	29.52	74.0	33.75	52.7					
29.1	56.09	42.3	14.45	58.9	56.69	42.7	29.06	71.4	33.61	50.6					
Mar. 10.1	56.04	40.6	14.34	56.4	56.66	41.6	28.74	68.6	33.52	48.3					
20.0	56.03	39.0	14.29	53.8	56.65	40.3	28.56	65.7	33.49	46.1					
30.0	56.06	37.5	14.31	51.4	56.68	38.7	28.53	62.7	33.51	44.0					
Apr. 9.0	56.15	36.3	14.41	49.1	56.76	36.9	28.66	59.8	33.59	42.0					
19.0	56.29	35.4	14.58	47.0	56.88	34.9	28.94	57.2	33.74	40.3					
28.9	56.48	34.8	14.83	45.3	57.03	32.7	29.37	54.8	33.95	39.0					
May 8.9	56.71	34.6	15.14	44.0	57.23	30.4	29.92	52.8	34.22	38.0					
18.9	56.98	34.7	15.51	43.2	57.47	28.0	30.59	51.3	34.53	37.5					
28.8	57.29	35.3	15.92	42.9	57.74	25.6	31.35	50.3	34.89	37.4					
June 7.8	57.62	36.3	16.37	43.0	58.03	23.3	32.17	49.9	35.28	37.8					
17.8	57.97	37.6	16.84	43.7	58.34	21.0	33.03	50.0	35.68	38.7					
27.8	58.32	39.2	17.31	44.8	58.67	18.8	33.92	50.6	36.10	40.0					
July 7.7	58.67	41.2	17.79	46.4	58.99	16.9	34.79	51.8	36.51	41.7					
17.7	59.01	43.4	18.24	48.4	59.31	15.3	35.64	53.5	36.91	43.7					
27.7	59.33	45.7	18.67	50.8	59.62	13.9	36.43	55.6	37.29	46.0					
Aug. 6.7	59.63	48.2	19.06	53.4	59.90	12.9	37.16	58.1	37.63	48.6					
16.6	59.89	50.7	19.41	56.3	60.16	12.2	37.81	61.0	37.94	51.4					
26.6	60.11	53.2	19.71	59.4	60.38	11.8	38.37	64.2	38.21	54.3					
Sept. 5.6	60.30	55.7	19.96	62.6	60.57	11.8	38.83	67.6	38.43	57.2					
15.5	60.44	58.2	20.15	65.9	60.71	12.2	39.17	71.2	38.61	60.2					
25.5	60.54	60.5	20.28	69.1	60.82	12.8	39.40	74.9	38.73	63.2					
Oct. 5.5	60.61	62.6	20.35	72.3	60.89	13.7	39.51	78.6	38.81	66.0					
15.5	60.63	64.6	20.37	75.3	60.93	14.8	39.59	82.2	38.84	68.7					
25.4	60.63	66.3	20.34	78.2	60.93	16.0	39.37	85.7	38.83	71.2					
Nov. 4.4	60.59	67.7	20.25	80.8	60.90	17.4	39.13	89.0	38.78	73.4					
14.4	60.52	68.9	20.12	83.0	60.84	18.7	38.78	92.0	38.69	75.3					
24.4	60.43	69.8	19.94	84.9	60.77	20.0	38.33	94.6	38.56	76.9					
Dec. 4.3	60.31	70.3	19.73	86.4	60.67	21.2	37.78	96.7	38.40	78.1					
14.3	60.18	70.5	19.49	87.3	60.57	22.2	37.16	98.3	38.22	78.8					
24.3	60.04	70.4	19.22	87.8	60.45	23.0	36.48	99.3	38.02	79.1					
34.2	59.88	70.0	18.93	87.8	60.33	23.7	35.76	99.8	37.80	79.0					

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

327

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Piscium.		γ Cassiopeizæ.		μ Andromedæ.		43 Cephei (H.).		ϵ Piscium.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 0 43	° ' " + 7 4	h m 0 51	° ' " + 60 12	h m 0 51	° ' " + 37 59	h m 0 55	° ' " + 85 45	h m 0 58	° ' " + 7 23
Jan. 0.3	53.54	58.5	8.21	77.4	37.77	66.2	62.83	63.5	9.18	36.2
10.2	53.43	57.8	7.87	77.3	37.59	65.7	59.92	64.0	9.06	35.5
20.2	53.31	57.1	7.52	76.6	37.41	64.9	56.99	63.9	8.94	34.8
30.2	53.19	56.4	7.18	75.5	37.23	63.8	54.14	63.2	8.82	34.1
Feb. 9.2	53.09	55.7	6.86	73.9	37.07	62.4	51.49	61.8	8.70	33.5
19.1	53.00	55.1	6.58	71.9	36.92	60.8	49.13	59.9	8.60	32.9
29.1	52.93	54.6	6.35	69.6	36.80	59.0	47.16	57.5	8.52	32.4
Mar. 10.1	52.89	54.3	6.19	67.1	36.72	57.2	45.65	54.8	8.47	32.1
20.0	52.88	54.1	6.10	64.5	36.69	55.4	44.66	51.9	8.45	31.9
30.0	52.91	54.2	6.09	61.9	36.70	53.7	44.22	48.8	8.46	31.9
Apr. 9.0	52.98	54.5	6.16	59.4	36.77	52.2	44.34	45.7	8.51	32.2
19.0	53.09	55.1	6.32	57.2	36.89	51.0	45.01	42.8	8.61	32.7
28.9	53.25	55.9	6.56	55.2	37.06	50.1	46.19	40.1	8.75	33.5
May 8.9	53.44	57.0	6.88	53.6	37.29	49.5	47.85	37.7	8.94	34.6
18.9	53.67	58.3	7.27	52.5	37.56	49.4	49.91	35.7	9.16	35.9
28.9	53.94	59.8	7.71	51.9	37.87	49.6	52.31	34.2	9.41	37.4
June 7.8	54.22	61.6	8.19	51.7	38.21	50.2	54.96	33.2	9.69	39.1
17.8	54.53	63.5	8.70	52.1	38.57	51.3	57.79	32.8	9.99	40.9
27.8	54.84	65.5	9.22	53.0	38.94	52.7	60.71	33.0	10.30	42.9
July 7.7	55.16	67.5	9.75	54.3	39.31	54.4	63.64	33.7	10.62	44.9
17.7	55.47	69.5	10.26	56.0	39.67	56.4	66.52	34.9	10.93	46.9
27.7	55.76	71.4	10.74	58.2	40.01	58.6	69.27	36.7	11.23	48.8
Aug. 6.7	56.03	73.3	11.19	60.7	40.33	61.0	71.83	38.9	11.51	50.7
16.6	56.28	75.0	11.60	63.5	40.62	63.6	74.15	41.5	11.76	52.4
26.6	56.49	76.5	11.96	66.5	40.87	66.2	76.18	44.5	11.99	53.9
Sept. 5.6	56.67	77.8	12.26	69.7	41.09	68.6	77.87	47.8	12.18	55.2
15.5	56.82	78.9	12.49	73.0	41.26	71.4	79.19	51.4	12.34	56.3
25.5	56.93	79.8	12.67	76.4	41.40	73.9	80.12	55.1	12.46	57.2
Oct. 5.5	57.00	80.4	12.78	79.7	41.49	76.2	80.62	58.9	12.55	57.8
15.5	57.05	80.8	12.83	82.9	41.54	78.4	80.69	62.8	12.60	58.2
25.5	57.06	81.0	12.82	85.9	41.56	80.4	80.30	66.5	12.63	58.5
Nov. 4.4	57.04	81.0	12.74	88.7	41.54	82.2	79.47	70.1	12.63	58.5
14.4	57.01	80.9	12.61	91.3	41.48	83.7	78.19	73.5	12.61	58.4
24.4	56.95	80.6	12.43	93.4	41.40	84.9	76.50	76.6	12.56	58.1
Dec. 4.3	56.87	80.2	12.20	95.2	41.29	85.8	74.43	79.2	12.49	57.7
14.3	56.78	79.6	11.93	96.5	41.16	86.3	72.03	81.3	12.41	57.2
24.3	56.68	79.0	11.63	97.3	41.01	86.4	69.37	82.9	12.31	56.6
34.3	56.57	78.4	11.30	97.5	40.84	86.2	66.52	83.9	12.20	56.0

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Andromedæ.		κ Tucanæ.		f Piscium.		θ^{α} Ceti.		38 Cassiopeiæ.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m I 4	° ' +35 7	h m I 12	° ' -69 21	h m I 13	° ' + 3 7	h m I 19	° ' - 8 39	h m I 24	° ' +69 47
Jan. 0.3	33.86	62.2	38.49	79.8	2.38	41.3	24.72	39.8	22.00	40.5
10.2	33.70	61.8	37.96	79.8	2.26	40.6	24.61	39.8	21.48	41.0
20.2	33.53	61.0	37.43	79.1	2.14	40.0	24.48	40.5	20.94	40.9
30.2	33.36	60.0	36.93	77.8	2.02	39.4	24.35	41.4	20.39	40.3
Feb. 9.2	33.20	58.8	36.46	76.0	1.90	38.9	24.23	41.6	19.86	39.2
19.1	33.05	57.3	36.04	73.7	1.79	38.5	24.12	41.5	19.38	37.5
29.1	32.93	55.7	35.68	70.9	1.70	38.2	24.02	41.3	18.96	35.4
Mar. 10.1	32.84	54.1	35.40	67.8	1.64	38.1	23.95	40.8	18.62	33.0
20.0	32.79	52.4	35.19	64.4	1.60	38.2	23.91	40.0	18.38	30.3
30.0	32.79	50.9	35.08	60.8	1.60	38.5	23.90	39.0	18.26	27.6
Apr. 9.0	32.84	49.6	35.07	57.1	1.64	39.0	23.93	37.8	18.26	24.8
19.0	32.95	48.5	35.15	53.3	1.72	39.8	24.00	36.4	18.38	22.2
28.9	33.11	47.7	35.34	49.5	1.85	40.8	24.12	34.7	18.62	19.7
May 8.9	33.31	47.2	35.62	45.9	2.02	42.1	24.28	32.8	18.97	17.6
18.9	33.57	47.1	35.99	42.4	2.22	43.5	24.48	30.8	19.42	15.8
28.9	33.86	47.4	36.46	39.2	2.47	45.2	24.71	28.7	19.97	14.5
June 7.8	34.18	48.0	37.00	36.3	2.74	47.0	24.98	26.5	20.58	13.7
17.8	34.52	49.0	37.60	33.9	3.03	48.9	25.27	24.3	21.25	13.4
27.8	34.88	50.4	38.25	31.9	3.34	50.9	25.57	22.2	21.96	13.6
July 7.8	35.24	52.0	38.93	30.4	3.65	52.9	25.89	20.1	22.68	14.2
17.7	35.60	54.0	39.63	29.5	3.96	54.9	26.20	18.2	23.40	15.4
27.7	35.94	56.1	40.32	29.1	4.26	56.8	26.50	16.5	24.10	17.1
Aug. 6.7	36.26	58.4	40.98	29.4	4.55	58.5	26.79	15.0	24.76	19.2
16.6	36.56	60.8	41.59	30.2	4.81	60.1	27.06	13.8	25.37	21.6
26.6	36.82	63.2	42.15	31.5	5.04	61.4	27.30	12.9	25.93	24.4
Sept. 5.6	37.04	65.6	42.62	33.4	5.25	62.5	27.51	12.4	26.42	27.4
15.6	37.23	68.0	43.00	35.7	5.42	63.4	27.69	12.1	26.83	30.7
25.5	37.37	70.4	43.29	38.4	5.56	64.0	27.84	12.2	27.16	34.1
Oct. 5.5	37.48	72.6	43.46	41.3	5.66	64.4	27.95	12.5	27.40	37.6
15.5	37.55	74.6	43.52	44.3	5.73	64.5	28.02	13.1	27.55	41.1
25.5	37.58	76.5	43.47	47.3	5.77	64.5	28.07	13.9	27.62	44.5
Nov. 4.4	37.58	78.1	43.32	50.3	5.79	64.3	28.08	14.8	27.59	47.8
14.4	37.55	79.5	43.07	53.0	5.77	63.9	28.07	15.8	27.46	50.8
24.4	37.49	80.6	42.73	55.4	5.73	63.4	28.03	16.8	27.25	53.6
Dec. 4.3	37.40	81.4	42.32	57.3	5.68	62.8	27.97	17.9	26.96	56.0
14.3	37.28	81.9	41.86	58.7	5.60	62.2	27.89	18.9	26.59	58.0
24.3	37.14	82.1	41.36	59.6	5.51	61.6	27.80	19.8	26.15	59.4
34.3	36.99	81.9	40.84	59.9	5.40	60.9	27.69	20.5	25.66	60.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Piscium.		ν Andromedæ.		π Piscium.		α Eridani. (Achernar.)		ν Piscium.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m 1 26	° ' " +14 52	h m 1 31	° ' " +40 56	h m 1 32	° ' " +11 40	h m 1 34	° ' " -57 41	h m 1 36	° ' " + 5 1
Jan. 0.3	32.80	15.2	23.00	48.9	12.50	11.7	16.99	99.1	37.90	13.7
10.3	32.68	14.6	22.82	48.9	12.39	11.1	16.67	99.5	37.79	13.0
20.2	32.55	14.0	22.63	48.4	12.26	10.5	16.34	99.4	37.66	12.4
30.2	32.41	13.3	22.43	47.6	12.13	9.8	16.02	98.7	37.53	11.8
Feb. 9.2	32.28	12.5	22.23	46.5	12.00	9.2	15.72	97.4	37.40	11.3
19.2	32.16	11.8	22.04	45.2	11.87	8.5	15.43	95.7	37.28	10.9
29.1	32.05	11.0	21.88	43.6	11.76	7.9	15.18	93.5	37.17	10.6
Mar. 10.1	31.97	10.4	21.76	41.9	11.68	7.4	14.98	90.9	37.09	10.4
20.1	31.92	9.8	21.67	40.1	11.62	7.0	14.82	88.0	37.03	10.4
30.1	31.91	9.4	21.63	38.3	11.60	6.8	14.72	84.7	37.01	10.6
Apr. 9.0	31.93	9.2	21.65	36.7	11.62	6.8	14.69	81.3	37.02	11.0
19.0	32.00	9.3	21.73	35.2	11.69	7.1	14.72	77.7	37.08	11.6
29.0	32.12	9.6	21.86	34.0	11.80	7.6	14.82	74.1	37.18	12.5
May 8.9	32.28	10.2	22.05	33.1	11.96	8.3	15.00	70.5	37.33	13.6
18.9	32.49	11.0	22.29	32.6	12.15	9.3	15.24	67.0	37.52	14.9
28.9	32.73	12.1	22.58	32.4	12.39	10.5	15.55	63.6	37.75	16.4
June 7.9	33.00	13.4	22.90	32.6	12.65	12.0	15.91	60.5	38.01	18.1
17.8	33.30	15.0	23.26	33.2	12.94	13.6	16.32	57.7	38.29	20.0
27.8	33.61	16.7	23.63	34.2	13.25	15.4	16.77	55.4	38.59	21.9
July 7.8	33.93	18.5	24.02	35.5	13.57	17.3	17.24	53.4	38.90	23.9
17.7	34.25	20.4	24.40	37.1	13.88	19.2	17.73	52.0	39.22	25.8
27.7	34.56	22.4	24.77	38.9	14.19	21.1	18.22	51.1	39.52	27.7
Aug. 6.7	34.86	24.3	25.13	41.0	14.49	23.0	18.69	50.8	39.82	29.4
16.7	35.13	26.2	25.46	43.3	14.76	24.7	19.13	51.1	40.09	31.0
26.6	35.38	27.9	25.76	45.7	15.01	26.3	19.54	51.9	40.34	32.4
Sept. 5.6	35.60	29.5	26.02	48.2	15.23	27.8	19.90	53.3	40.56	33.6
15.6	35.79	31.0	26.25	50.7	15.42	29.1	20.20	55.1	40.75	34.5
25.6	35.94	32.2	26.44	53.2	15.58	30.1	20.44	57.4	40.91	35.2
Oct. 5.5	36.06	33.3	26.59	55.6	15.71	31.0	20.61	59.9	41.04	35.7
15.5	36.15	34.1	26.70	57.9	15.80	31.7	20.71	62.7	41.14	35.9
25.5	36.21	34.8	26.77	60.1	15.86	32.1	20.74	65.6	41.20	36.0
Nov. 4.4	36.24	35.3	26.80	62.0	15.90	32.4	20.70	68.5	41.24	35.9
14.4	36.24	35.5	26.79	63.8	15.90	32.5	20.60	71.3	41.25	35.6
24.4	36.21	35.6	26.75	65.3	15.88	32.5	20.44	73.8	41.23	35.2
Dec. 4.4	36.16	35.6	26.67	66.5	15.84	32.3	20.23	76.0	41.19	34.7
14.3	36.09	35.4	26.56	67.4	15.77	32.0	19.98	77.8	41.13	34.1
24.3	36.00	35.1	26.42	67.9	15.68	31.6	19.70	79.1	41.04	33.5
34.3	35.89	34.6	26.26	68.1	15.58	31.1	19.39	79.9	40.94	32.9

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♋ Piscium.		♌ Ceti.		♈ Arietis.		♊ Cassiopeiz.		♎ Andromedæ.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m I 40	° ' + 8 41	h m I 46	° ' - 10 47	h m I 49	° ' + 20 21	h m I 55	° ' + 71 58	h m I 58	° ' + 41 53
	s	"	s	"	s	"	s	"	s	"
Jan. 0.3	31.42	36.4 .06	54.57	33.3 .07	32.73	29.3 .04	33.89	46.2 .10	14.43	23.8 .02
10.3	31.30	35.8 .06	54.46	34.0 .06	32.61	28.9 .05	33.33	47.2 .05	14.26	24.0 .02
20.3	31.18	35.2 .07	54.33	34.6 .04	32.48	28.4 .06	32.73	47.7 .02	14.07	23.8 .03
30.3	31.05	34.5 .06	54.19	35.0 .02	32.33	27.8 .08	32.11	47.5 .07	13.86	23.3 .09
Feb. 9.2	30.91	33.9 .05	54.06	35.2 .01	32.18	27.0 .08	31.49	46.8 .13	13.65	22.4 .11
19.2	30.79	33.4 .05	53.93	35.1 .03	32.04	26.2 .08	30.90	45.5 .18	13.45	21.3 .14
29.1	30.67	32.9 .03	53.81	34.8 .06	31.91	25.4 .09	30.37	43.7 .21	13.26	19.9 .16
Mar. 10.1	30.58	32.6 .02	53.71	34.2 .08	31.81	24.5 .08	29.91	41.6 .25	13.10	18.3 .16
20.1	30.52	32.4 .00	53.64	33.4 .11	31.73	23.7 .06	29.56	39.1 .27	12.99	16.7 .17
30.1	30.50	32.4 .02	53.61	32.3 .13	31.69	23.1 .05	29.33	36.4 .27	12.92	15.0 .17
Apr. 9.0	30.51	32.6 .04	53.61	31.0 .15	31.70	22.6 .03	29.23	33.7 .27	12.90	13.3 .15
19.0	30.57	33.0 .06	53.65	29.5 .18	31.75	22.3 .01	29.26	31.0 .26	12.94	11.8 .13
29.0	30.67	33.6 .09	53.74	27.7 .20	31.85	22.2 .02	29.43	28.4 .24	13.05	10.5 .10
May 8.9	30.82	34.5 .11	53.87	25.7 .21	31.99	22.4 .05	29.74	26.0 .21	13.21	9.5 .08
18.9	31.00	35.6 .14	54.05	23.6 .22	32.18	22.9 .07	30.17	23.9 .16	13.42	8.7 .04
28.9	31.23	37.0 .15	54.26	21.4 .23	32.41	23.6 .10	30.70	22.3 .13	13.69	8.3 .00
June 7.9	31.49	38.5 .17	54.51	19.1 .22	32.68	24.6 .12	31.33	21.0 .07	14.00	8.3 .03
17.8	31.77	40.2 .18	54.79	16.9 .23	32.97	25.8 .15	32.03	20.3 .03	14.35	8.6 .07
27.8	32.07	42.0 .19	55.09	14.6 .21	33.28	27.3 .16	32.79	20.0 .02	14.72	9.3 .11
July 7.8	32.38	43.9 .20	55.40	12.5 .20	33.61	28.9 .18	33.58	20.2 .08	15.10	10.4 .13
17.8	32.70	45.9 .18	55.71	10.5 .17	33.94	30.7 .18	34.38	21.0 .12	15.49	11.7 .16
27.7	33.01	47.7 .18	56.02	8.8 .15	34.26	32.5 .19	35.18	22.2 .16	15.88	13.3 .19
Aug. 6.7	33.31	49.5 .17	56.32	7.3 .12	34.57	34.4 .19	35.95	23.8 .21	16.25	15.2 .21
16.7	33.58	51.2 .15	56.60	6.1 .09	34.86	36.3 .18	36.69	25.9 .24	16.60	17.3 .22
26.7	33.84	52.7 .14	56.86	5.2 .05	35.13	38.1 .18	37.37	28.3 .28	16.93	19.5 .23
Sept. 5.6	34.06	54.1 .11	57.09	4.7 .02	35.38	39.9 .16	37.99	31.1 .30	17.23	21.8 .24
15.6	34.26	55.2 .09	57.29	4.5 .02	35.59	41.5 .15	38.54	34.1 .32	17.49	24.2 .24
25.6	34.43	56.1 .07	57.46	4.7 .04	35.77	43.0 .13	39.00	37.3 .34	17.72	26.6 .23
Oct. 5.5	34.56	56.8 .04	57.60	5.1 .07	35.92	44.3 .11	39.37	40.7 .35	17.91	28.9 .23
15.5	34.66	57.2 .03	57.70	5.8 .09	36.04	45.4 .10	39.64	44.2 .34	18.06	31.2 .22
25.5	34.73	57.5 .01	57.77	6.7 .12	36.12	46.4 .08	39.81	47.6 .34	18.17	33.4 .21
Nov. 4.5	34.77	57.6 .01	57.81	7.9 .11	36.17	47.2 .06	39.88	51.0 .33	18.24	35.5 .18
14.4	34.79	57.5 .02	57.82	9.0 .12	36.20	47.8 .04	39.84	54.3 .30	18.27	37.3 .17
24.4	34.77	57.3 .03	57.80	10.2 .12	36.19	48.2 .03	39.70	57.3 .27	18.26	39.0 .14
Dec. 4.4	34.73	57.0 .04	57.76	11.4 .11	36.16	48.5 .00	39.45	60.0 .23	18.21	40.4 .11
14.3	34.67	56.6 .05	57.70	12.5 .11	36.10	48.5 .01	39.10	62.3 .19	18.12	41.5 .08
24.3	34.59	56.1 .06	57.61	13.6 .08	36.01	48.4 .02	38.66	64.2 .14	18.00	42.3 .04
34.3	34.49	55.5	57.51	14.4	35.91	48.2	38.15	65.6	17.85	42.7

FIXED STARS, 1908.

331

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Arietis.		β Trianguli.		ξ^1 Ceti.		γ Trianguli.		δ Ceti.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 2 I	° ' " +23 I	h m 2 4	° ' " +34 32	h m 2 8	° ' " +8 24	h m 2 I I	° ' " +33 25	h m 2 I 2	° ' " - 6 50
Jan. 0.3	58.57	39.1	3.49	71.4	6.85	49.8	50.08	21.6	23.19	55.6
10.3	58.45	38.8	3.35	71.5	6.74	49.3	49.94	21.6	23.08	56.4
20.3	58.31	38.4	3.19	71.2	6.62	48.7	49.78	21.4	22.96	57.1
30.3	58.16	37.8	3.01	70.7	6.48	48.1	49.61	20.9	22.82	57.6
Feb. 9.2	58.00	37.1	2.83	69.9	6.34	47.6	49.43	20.2	22.68	57.9
19.2	57.85	36.3	2.65	68.9	6.20	47.1	49.25	19.3	22.54	58.0
29.2	57.71	35.4	2.48	67.8	6.07	46.7	49.08	18.2	22.41	57.9
Mar. 10.1	57.59	34.5	2.34	66.5	5.96	46.4	48.94	17.0	22.29	57.5
20.1	57.50	33.6	2.24	65.1	5.88	46.2	48.83	15.7	22.20	56.9
30.1	57.45	32.8	2.17	63.8	5.83	46.2	48.76	14.5	22.14	56.1
Apr. 9.0	57.45	32.2	2.16	62.5	5.81	46.4	48.73	13.3	22.12	55.1
19.0	57.48	31.7	2.19	61.4	5.84	46.8	48.76	12.2	22.14	53.8
29.0	57.57	31.4	2.28	60.5	5.92	47.5	48.84	11.4	22.21	52.3
May 9.0	57.71	31.4	2.43	59.8	6.04	48.3	48.98	10.7	22.32	50.6
18.9	57.89	31.7	2.63	59.4	6.20	49.4	49.17	10.4	22.47	48.7
June 28.9	58.12	32.3	2.87	59.4	6.40	50.7	49.40	10.3	22.67	46.6
7.9	58.38	33.1	3.15	59.6	6.64	52.2	49.68	10.6	22.90	44.5
17.9	58.67	34.2	3.47	60.2	6.91	53.8	49.99	11.2	23.16	42.3
27.8	58.98	35.5	3.81	61.1	7.20	55.6	50.32	12.1	23.44	40.2
July 7.8	59.31	37.0	4.17	62.3	7.51	57.4	50.67	13.2	23.74	38.1
17.8	59.64	38.6	4.53	63.7	7.82	59.2	51.02	14.6	24.04	36.1
27.7	59.97	40.4	4.89	65.4	8.13	61.0	51.38	16.2	24.35	34.3
Aug. 6.7	60.29	42.2	5.23	67.2	8.43	62.7	51.72	18.0	24.65	32.7
16.7	60.59	44.1	5.56	69.2	8.72	64.3	52.05	19.9	24.94	31.4
26.7	60.87	45.9	5.87	71.2	8.99	65.8	52.36	21.9	25.21	30.3
Sept. 5.6	61.13	47.7	6.15	73.3	9.24	67.1	52.65	23.9	25.46	29.6
15.6	61.35	49.4	6.40	75.4	9.46	68.1	52.90	25.9	25.68	29.2
25.6	61.55	50.9	6.62	77.5	9.65	69.0	53.12	27.9	25.87	29.1
Oct. 5.6	61.71	52.3	6.80	79.5	9.81	69.6	53.31	29.8	26.03	29.4
15.5	61.84	53.6	6.95	81.4	9.94	70.0	53.47	31.5	26.16	29.9
Nov. 25.5	61.94	54.7	7.06	83.2	10.03	70.2	53.59	33.3	26.26	30.6
4.5	62.01	55.7	7.13	84.8	10.10	70.3	53.67	34.8	26.32	31.5
14.4	62.05	56.4	7.17	86.3	10.14	70.2	53.72	36.2	26.36	32.5
24.4	62.06	57.0	7.17	87.5	10.16	69.9	53.73	37.4	26.37	33.6
Dec. 4.4	62.04	57.4	7.14	88.6	10.14	69.5	53.71	38.4	26.35	34.7
14.4	61.98	57.7	7.08	89.4	10.10	69.1	53.66	39.2	26.30	35.8
24.3	61.90	57.7	6.98	89.9	10.03	68.6	53.57	39.7	26.23	36.8
34.3	61.80	57.6	6.86	90.1	9.94	68.1	53.45	40.0	26.14	37.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Hydri.		ϵ Cassiopeiæ.		ξ^2 Ceti.		μ Hydri.		δ Ceti.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.
	h m 2 20	° ' 0 -69 4	h m 2 21	° ' 0 +66 59	h m 2 23	° ' 0 + 8 2	h m 2 33	° ' 0 -79 30	h m 2 34	° ' 0 - 0 3
	s "	"	s "	"	s "	"	s "	"	s "	"
Jan. 0.3	7.46	64.8	28.73	30.8	15.55	47.4	39.34	63.7	45.63	72.7
10.3	6.93	65.7	28.35	31.9	15.45	46.8	38.22	64.6	45.53	73.4
20.3	6.38	66.0	27.91	32.6	15.33	46.3	37.03	64.8	45.41	74.1
30.2	5.81	65.6	27.44	32.7	15.19	45.7	35.81	64.5	45.27	74.6
Feb. 9.2	5.24	64.7	26.96	32.2	15.05	45.2	34.60	63.6	45.13	75.0
19.2	4.70	63.2	26.49	31.3	14.90	44.8	33.43	62.1	44.98	75.3
29.2	4.20	61.2	26.05	29.8	14.76	44.4	32.33	60.1	44.84	75.4
Mar. 10.1	3.75	58.8	25.67	28.0	14.64	44.2	31.33	57.6	44.71	75.4
20.1	3.36	55.9	25.36	25.8	14.55	44.1	30.46	54.7	44.61	75.1
30.1	3.05	52.7	25.13	23.4	14.48	44.1	29.73	51.5	44.54	74.7
Apr. 9.1	2.83	49.2	25.00	20.9	14.45	44.3	29.16	48.0	44.50	74.0
19.0	2.71	45.6	24.98	18.3	14.47	44.7	28.78	44.4	44.50	73.2
29.0	2.69	41.8	25.07	15.9	14.53	45.3	28.58	40.6	44.54	72.1
May 9.0	2.77	38.0	25.27	13.6	14.63	46.1	28.58	36.8	44.63	70.8
18.9	2.95	34.3	25.58	11.6	14.78	47.2	28.78	33.1	44.77	69.3
28.9	3.24	30.7	25.98	9.9	14.97	48.5	29.17	29.6	44.95	67.6
June 7.9	3.62	27.4	26.46	8.5	15.20	49.9	29.74	26.2	45.16	65.8
17.9	4.08	24.3	27.00	7.6	15.46	51.5	30.48	23.2	45.41	63.9
27.8	4.62	21.6	27.60	7.2	15.75	53.2	31.37	20.5	45.68	61.9
July 7.8	5.21	19.3	28.24	7.3	16.05	55.0	32.39	18.2	45.97	60.0
17.8	5.85	17.5	28.90	7.8	16.36	56.8	33.51	16.5	46.28	58.1
27.8	6.51	16.3	29.56	8.7	16.67	58.6	34.70	15.4	46.58	56.3
Aug. 6.7	7.18	15.7	30.22	10.1	16.98	60.3	35.92	14.8	46.88	54.6
16.7	7.84	15.7	30.85	11.9	17.27	61.9	37.13	14.8	47.17	53.2
26.7	8.46	16.3	31.45	14.0	17.55	63.3	38.30	15.4	47.45	52.0
Sept. 5.6	9.03	17.5	32.00	16.5	17.80	64.5	39.39	16.6	47.71	51.0
15.6	9.54	19.3	32.49	19.2	18.03	65.5	40.36	18.4	47.95	50.3
25.6	9.96	21.5	32.93	22.1	18.23	66.3	41.19	20.6	48.16	49.9
Oct. 5.6	10.29	24.1	33.30	25.2	18.40	66.9	41.84	23.3	48.34	49.8
15.5	10.52	27.0	33.60	28.4	18.55	67.3	42.29	26.2	48.49	49.9
25.5	10.64	30.1	33.83	31.6	18.66	67.4	42.52	29.4	48.61	50.2
Nov. 4.5	10.65	33.3	33.97	34.8	18.75	67.4	42.53	32.6	48.70	50.5
14.5	10.55	36.4	34.02	37.9	18.80	67.3	42.32	35.7	48.77	51.5
24.4	10.36	39.3	33.99	40.8	18.83	67.0	41.90	38.7	48.80	52.2
Dec. 4.4	10.07	41.9	33.88	43.5	18.83	66.6	41.27	41.4	48.80	53.1
14.4	9.69	44.2	33.68	45.8	18.80	66.1	40.47	43.6	48.78	53.9
24.3	9.25	45.9	33.41	47.8	18.74	65.6	39.52	45.4	48.72	54.7
34.3	8.75	47.1	33.06	49.3	18.65	65.1	38.45	46.6	48.64	55.5

FIXED STARS, 1908.

333

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	θ Persei.			γ Ceti.			σ Arietis.			47 Cephei (H.).			ε Arietis.		
	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.
	h m	° ' "		h m	° ' "		h m	° ' "		h m	° ' "		h m	° ' "	
	2 37	+48 50		2 38	+ 2 50		2 46	+14 42		2 53	+79 3		2 53	+20 58	
	s	"		s	"		s	"		s	"		s	"	
Jan. 0.3	54.52	.18	28.9 .8	31.61	.09	47.3 .07	24.38	.09	8.2 .04	51.31	.81	31.3	56.67	.09	20.1 .01
10.3	54.34	.21	29.7 .3	31.52	.12	46.6 .07	24.29	.12	7.8 .04	50.50	.93	33.2 1.4	56.58	.12	20.0 .2
20.3	54.13	.24	30.0 .0	31.40	.13	45.9 .05	24.17	.14	7.4 .04	49.57	1.02	34.6 .07	56.46	.13	19.8 .04
30.3	53.89	.25	30.0 .0	31.27	.15	45.4 .05	24.03	.15	7.0 .05	48.55	1.07	35.3 .02	56.31	.16	19.4 .04
Feb. 9.2	53.64	.26	29.6 .8	31.12	.15	44.9 .03	23.88	.16	6.5 .05	47.48	1.07	35.5 .04	56.15	.16	19.0 .5
19.2	53.38	.24	28.8	30.97	.14	44.6 .2	23.72	.15	6.0 .05	46.41	1.03	35.1	55.99	.16	18.5 .6
29.2	53.14	.22	27.6 1.2	30.83	.13	44.4 .1	23.57	.14	5.5 .04	45.38	.94	34.1 1.6	55.83	.15	17.9 .7
Mar. 10.2	52.92	.18	26.2 1.4	30.70	.11	44.3 .1	23.43	.12	5.1 .04	44.44	.81	32.5 2.0	55.68	.13	17.2 .6
20.1	52.74	.13	24.6 1.8	30.59	.08	44.4 .3	23.31	.08	4.7 .03	43.63	.65	30.5 2.3	55.55	.10	16.6 .5
30.1	52.61	.08	22.8 1.8	30.51	.04	44.7 .5	23.23	.05	4.4 .02	42.98	.46	28.2 2.6	55.45	.06	16.1 .5
Apr. 9.1	52.53	.01	21.0 1.8	30.47	.00	45.2 .7	23.18	.01	4.2 .00	42.52	.26	25.6 2.8	55.39	.01	15.6 .4
19.0	52.52	.06	19.2 1.7	30.47	.04	45.9 .9	23.17	.04	4.2 .03	42.26	.03	22.8 2.8	55.38	.03	15.2 .2
29.0	52.58	.12	17.5 1.5	30.51	.09	46.8 1.2	23.21	.09	4.5 .04	42.23	.19	20.0 2.8	55.41	.09	15.0 .1
May 9.0	52.70	.19	16.0 1.3	30.60	.13	48.0 1.3	23.30	.13	4.9 .06	42.42	.40	17.2 2.6	55.50	.13	15.1 .2
19.0	52.89	.25	14.7 1.0	30.73	.18	49.3 1.5	23.43	.18	5.5 .08	42.82	.60	14.6 2.3	55.63	.18	15.3 .4
28.9	53.14	.31	13.7 .9	30.91	.21	50.8 1.6	23.61	.22	6.3 1.1	43.42	.79	12.3 2.0	55.81	.22	15.7 .7
June 7.9	53.45	.35	13.0 .3	31.12	.25	52.4 1.8	23.83	.25	7.4 1.2	44.21	.93	10.3 1.7	56.03	.25	16.4 .9
17.9	53.80	.39	12.7 .1	31.37	.27	54.2 1.9	24.08	.28	8.6 1.2	45.14	1.07	8.6 1.2	56.28	.28	17.3 1.1
27.9	54.19	.41	12.8 .4	31.64	.29	56.1 1.8	24.36	.30	10.0 1.5	46.21	1.16	7.4 .7	56.56	.31	18.4 1.3
July 7.8	54.60	.42	13.2 .8	31.93	.30	57.9 1.9	24.66	.31	11.5 1.6	47.37	1.24	6.7 .2	56.87	.32	19.7 1.4
17.8	55.02	.43	14.0 1.1	32.23	.31	59.8 1.8	24.97	.31	13.1 1.6	48.61	1.28	6.5 .2	57.19	.32	21.1 1.5
27.8	55.45	.43	15.1 1.4	32.54	.30	61.6 1.6	25.28	.32	14.7 1.6	49.89	1.29	6.7 .7	57.51	.33	22.6 1.5
Aug. 6.7	55.88	.42	16.5 1.6	32.84	.30	63.2 1.5	25.60	.30	16.3 1.5	51.18	1.28	7.4 1.2	57.84	.31	24.1 1.5
16.7	56.30	.39	18.1 1.9	33.14	.28	64.7 1.3	25.90	.29	17.8 1.5	52.46	1.24	8.6 1.6	58.15	.30	25.6 1.6
26.7	56.69	.37	20.0 2.1	33.42	.26	66.0 1.0	26.19	.28	19.3 1.4	53.70	1.18	10.2 2.1	58.45	.29	27.2 1.4
Sept. 5.7	57.06	.34	22.1 2.3	33.68	.23	67.0 .8	26.47	.25	20.7 1.2	54.88	1.10	12.3 2.4	58.74	.26	28.6 1.4
15.6	57.40	.31	24.4 2.3	33.91	.21	67.8 .5	26.72	.22	21.9 1.0	55.98	.99	14.7 2.8	59.00	.24	30.0 1.3
25.6	57.71	.26	26.7 2.3	34.12	.19	68.3 .3	26.94	.20	22.9 .9	56.97	.87	17.5 3.0	59.24	.22	31.3 1.1
Oct. 5.6	57.97	.23	29.1 2.4	34.31	.16	68.6 .0	27.14	.17	23.8 .7	57.84	.73	20.5 3.2	59.46	.18	32.4 1.0
15.6	58.20	.18	31.6 2.4	34.47	.12	68.6 .2	27.31	.14	24.5 .5	58.57	.57	23.7 3.4	59.64	.15	33.4 .9
25.5	58.38	.14	34.0 2.3	34.59	.10	68.4 .3	27.45	.12	25.0 .3	59.14	.40	27.1 3.5	59.79	.13	34.3 .7
Nov. 4.5	58.52	.09	36.3 2.3	34.69	.07	68.1 .5	27.57	.08	25.3 .2	59.54	.22	30.6 3.5	59.92	.10	35.0 .6
14.5	58.61	.04	38.6 2.1	34.76	.04	67.6 .6	27.65	.05	25.5 .1	59.76	.03	34.1 3.4	60.02	.06	35.6 .4
24.4	58.65	.01	40.7 1.9	34.80	.01	67.0 .7	27.70	.02	25.6 .0	59.79	.16	37.5 3.3	60.08	.02	36.0 .4
Dec. 4.4	58.64	.06	42.6 1.6	34.81	.03	66.3 .8	27.72	.01	25.6 .1	59.63	.36	40.8 3.0	60.10	.00	36.4 .2
14.4	58.58	.10	44.2 1.3	34.78	.05	65.5 .7	27.71	.05	25.5 .2	59.27	.54	43.8 2.6	60.10	.04	36.6 .1
24.4	58.48	.15	45.5 1.0	34.73	.07	64.8 .6	27.66	.07	25.3 .3	58.73	.71	46.4 2.2	60.06	.07	36.7 .1
34.3	58.33		46.5	34.66		64.2	27.59		25.0	58.02		48.6	59.99		36.6

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ceti.			β Persei.			48 Cephei (H.).			ζ Arietis.			α Persei.		
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.	
	h m	°		h m	°		h m	°		h m	°		h m	°	
	2 57	+ 3 43		3 2	+ 40 35		3 8	+ 77 23		3 9	+ 20 42		3 17	+ 49 31	
Jan. 0-4	27.90	38.3		10.60	69.3		38.94	60.3		36.47	12.0		45.04	68.1	
10.3	27.81	37.6	0.7	10.48	69.9	0.6	38.30	62.3	2.0	36.38	11.9	0.1	44.89	69.2	1.1
20.3	27.70	37.0	0.6	10.32	70.3	0.4	37.53	63.8	1.5	36.27	11.7	0.2	44.70	69.9	0.7
30.3	27.57	36.5	0.5	10.13	70.3	0.0	36.68	64.8	1.0	36.13	11.4	0.3	44.48	70.3	0.4
Feb. 9-2	27.42	36.1	0.4	9.92	70.1	0.2	35.77	65.1	0.3	35.97	11.0	0.4	44.23	70.3	0.4
19-2	27.27	35.7	0.2	9.70	69.5	0.8	34.84	64.9	0.9	35.81	10.5	0.5	43.96	69.9	0.7
29-2	27.12	35.5	0.1	9.48	68.7	1.1	33.94	64.0	0.9	35.64	10.0	0.5	43.69	69.2	0.7
Mar. 10-2	26.98	35.4	0.1	9.28	67.6	1.1	33.10	62.7	1.3	35.48	9.5	0.5	43.44	68.1	1.1
20-1	26.86	35.5	0.2	9.11	66.4	1.2	32.37	60.9	1.8	35.34	8.9	0.6	43.22	66.8	1.3
30-1	26.77	35.7	0.5	8.98	65.1	1.4	31.76	58.7	2.5	35.23	8.4	0.4	43.04	65.3	1.7
Apr. 9-1	26.71	36.2	0.6	8.89	63.7	1.4	31.32	56.2	2.7	35.16	8.0	0.3	42.91	63.6	1.7
19-1	26.69	36.8	0.8	8.86	62.3	1.3	31.06	53.5	2.8	35.13	7.7	0.2	42.85	61.9	1.7
29-0	26.71	37.6	1.0	8.89	61.0	1.1	30.98	50.7	2.7	35.15	7.5	0.0	42.85	60.2	1.6
May 9-0	26.78	38.6	1.3	8.97	59.9	0.9	31.09	48.0	2.6	35.22	7.5	0.2	42.92	58.6	1.5
19-0	26.90	39.9	1.4	9.11	59.0	0.7	31.40	45.4	2.3	35.34	7.7	0.4	43.05	57.1	1.2
June 28-9	27.06	41.3	1.6	9.31	58.3	0.4	31.88	43.1	2.1	35.50	8.1	0.6	43.25	55.9	1.0
7-9	27.26	42.9	1.7	9.57	57.9	0.1	32.52	41.0	1.8	35.71	8.7	0.9	43.52	54.9	0.6
17-9	27.50	44.6	1.7	9.86	57.8	0.2	33.31	39.2	1.3	35.95	9.6	1.0	43.84	54.3	0.4
27-9	27.76	46.3	1.8	10.19	58.0	0.2	34.22	37.9	0.9	36.22	10.6	1.2	44.20	53.9	0.0
July 7-8	28.04	48.1	1.8	10.55	58.5	0.7	35.23	37.0	0.4	36.52	11.8	1.3	44.59	53.9	0.3
17-8	28.34	49.9	1.8	10.92	59.2	1.0	36.30	36.6	0.1	36.83	13.1	1.4	45.01	54.2	0.7
27-8	28.64	51.7	1.6	11.30	60.2	1.3	37.43	36.7	0.5	37.15	14.5	1.4	45.44	54.9	0.9
Aug. 6-8	28.95	53.3	1.4	11.68	61.5	1.4	38.57	37.2	1.0	37.48	15.9	1.4	45.88	55.8	1.2
16-7	29.25	54.7	1.3	12.06	62.9	1.6	39.71	38.2	1.4	37.80	17.4	1.5	46.31	57.0	1.5
26-7	29.53	56.0	1.0	12.42	64.5	1.8	40.83	39.6	1.9	38.10	18.8	1.4	46.73	58.5	1.6
Sept. 5-7	29.80	57.0	0.8	12.77	66.3	1.8	41.90	41.5	2.2	38.39	20.2	1.3	47.14	60.1	1.9
15-6	30.05	57.8	0.6	13.09	68.1	1.9	42.91	43.7	2.5	38.67	21.5	1.2	47.52	62.0	2.0
25-6	30.28	58.4	0.3	13.39	70.0	2.0	43.83	46.2	2.9	38.92	22.7	1.0	47.88	64.0	2.1
Oct. 5-6	30.48	58.7	0.0	13.65	72.0	1.9	44.66	49.1	3.1	39.15	23.7	0.9	48.20	66.1	2.2
15-6	30.65	58.7	0.1	13.88	73.9	1.9	45.37	52.2	3.3	39.35	24.6	0.8	48.48	68.3	2.2
Nov. 25-5	30.80	58.6	0.4	14.08	75.8	1.8	45.94	55.5	3.3	39.52	25.4	0.7	48.73	70.5	2.3
4-5	30.92	58.2	0.5	14.23	77.6	1.8	46.37	58.8	3.4	39.66	26.1	0.5	48.93	72.8	2.2
14-5	31.00	57.7	0.6	14.35	79.4	1.6	46.05	62.2	3.4	39.77	26.0	0.4	49.08	75.0	2.1
24-5	31.06	57.1	0.7	14.43	81.0	1.5	46.76	65.6	3.3	39.85	27.0	0.4	49.19	77.1	2.0
Dec. 4-4	31.09	56.4	0.7	14.46	82.5	1.3	46.70	68.9	3.0	39.89	27.3	0.2	49.24	79.1	1.8
14-4	31.08	55.7	0.7	14.45	84.8	1.1	46.47	71.9	2.7	39.90	27.5	0.1	49.24	81.1	1.7
24-4	31.04	55.0	0.6	14.40	84.9	0.8	46.07	74.6	2.3	39.87	27.6	0.1	49.18	82.5	1.6
34-3	30.98	54.4	0.6	14.30	85.7	0.5	45.52	76.9	2.3	39.81	27.6	0.1	49.07	83.8	1.5

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

335

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Hydri.		β Tauri.		ε Eridani.		δ Persei.		γ Camelopardalis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 3 18	° ' " -77 43	h m 3 25	° ' " +12 37	h m 3 28	° ' " - 9 45	h m 3 36	° ' " +47 29	h m 3 40	° ' " +71 2
	s "	"	s "	"	s "	"	s "	"	s "	"
Jan. 0.4	18.24	0.89 50.8	47.42	14.5	35.70	79.0	22.33	42.0	39.23	65.1
10.3	17.35	0.89 52.3	47.35	14.2	35.62	80.2	22.21	43.1	38.90	67.2
20.3	16.37	0.98 53.3	47.24	13.8	35.51	81.1	22.05	43.9	38.48	68.9
30.3	15.33	1.04 53.7	47.11	13.4	35.37	81.9	21.85	44.4	37.97	70.1
Feb. 9.3	14.26	1.07 53.5	46.96	13.0	35.22	82.4	21.61	44.6	37.41	70.7
		1.07 53.5		13.0		82.4		44.6		
	19.2	1.05 52.7	46.80	12.7	35.05	82.6	21.36	44.4	36.82	70.8
29.2	12.14	0.98 51.3	46.64	12.3	34.88	82.6	21.10	43.9	36.22	70.4
Mar. 10.2	11.16	0.91 49.5	46.48	12.0	34.72	82.3	20.85	43.0	35.64	69.4
20.2	10.25	0.80 47.2	46.34	11.8	34.57	81.8	20.63	41.9	35.11	68.0
30.1	9.45	0.67 44.4	46.23	11.7	34.45	81.0	20.44	40.6	34.66	66.2
		0.67 44.4		11.7		81.0		40.6		
Apr. 9.1	8.78	0.53 41.3	46.15	11.6	34.36	80.0	20.30	39.1	34.31	64.1
19.1	8.25	0.37 38.0	46.10	11.8	34.30	78.7	20.21	37.5	34.07	61.7
29.0	7.88	0.21 34.5	46.11	12.1	34.29	77.2	20.19	35.9	33.95	59.2
May 9.0	7.67	0.04 30.8	46.15	12.5	34.32	75.5	20.24	34.4	33.97	56.7
19.0	7.63	0.14 27.1	46.25	13.2	34.40	73.5	20.35	33.0	34.11	54.3
		0.14 27.1		13.2		73.5		33.0		
29.0	7.77	0.30 23.4	46.39	14.0	34.52	71.5	20.52	31.8	34.39	52.0
June 7.9	8.07	0.47 19.8	46.57	15.0	34.68	69.3	20.75	30.9	34.78	49.9
17.9	8.54	0.62 16.5	46.79	16.2	34.88	67.1	21.04	30.2	35.27	48.1
27.9	9.16	0.76 13.4	47.05	17.5	35.12	64.8	21.37	29.7	35.86	46.7
July 7.9	9.92	0.87 10.7	47.32	18.9	35.38	62.6	21.74	29.6	36.53	45.6
		0.87 10.7		18.9		62.6		29.6		
17.8	10.79	0.95 8.5	47.62	20.4	35.66	60.5	22.14	29.8	37.26	44.9
27.8	11.74	1.02 6.7	47.92	21.9	35.95	58.6	22.55	30.3	38.03	44.7
Aug. 6.8	12.76	1.04 5.5	48.23	23.3	36.25	57.0	22.97	31.1	38.82	44.9
16.7	13.80	1.04 4.9	48.54	24.7	36.55	55.6	23.40	32.1	39.63	45.5
26.7	14.84	1.01 4.9	48.84	26.0	36.84	54.5	23.81	33.3	40.43	46.5
		1.01 4.9		26.0		54.5		33.3		
Sept. 5.7	15.85	0.94 5.6	49.13	27.2	37.12	53.8	24.22	34.8	41.22	47.9
15.7	16.79	0.84 6.8	49.40	28.2	37.38	53.4	24.60	36.4	41.97	49.7
25.6	17.63	0.72 8.6	49.65	29.0	37.62	53.4	24.96	38.1	42.67	51.8
Oct. 5.6	18.35	0.57 10.9	49.88	29.6	37.84	53.7	25.29	40.0	43.32	54.2
15.6	18.92	0.39 13.6	50.09	30.0	38.04	54.4	25.59	42.0	43.90	56.8
		0.39 13.6		30.0		54.4		42.0		
25.6	19.31	0.21 16.6	50.27	30.3	38.21	55.3	25.85	44.0	44.41	59.7
Nov. 4.5	19.52	0.02 19.8	50.42	30.4	38.35	56.5	26.08	46.1	44.82	62.7
14.5	19.54	0.17 23.0	50.54	30.4	38.46	57.8	26.26	48.1	45.14	65.8
24.5	19.37	0.36 26.2	50.63	30.3	38.53	59.3	26.39	50.1	45.35	68.9
Dec. 4.4	19.01	0.53 29.2	50.69	30.1	38.57	60.8	26.47	52.0	45.44	71.9
		0.53 29.2		30.1		60.8		52.0		
14.4	18.48	0.69 32.0	50.71	29.9	38.58	62.2	26.50	53.7	45.41	74.8
24.4	17.79	0.82 34.3	50.70	29.6	38.56	63.6	26.47	55.3	45.27	77.4
34.4	16.97	1.18 36.1	50.65	29.2	38.50	64.8	26.39	56.6	45.02	79.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Tauri.		ζ Persei.		γ Hydri.		ϵ Persei.		γ Eridani.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 3 41	° ' " +23 49	h m 3 48	° ' " +31 36	h m 3 48	° ' " -74 30	h m 3 51	° ' " +39 44	h m 3 53	° ' " -13 45
Jan. 0.4	60.76	14.6	20.78	39.6	43.00	95.1	40.72	42.5	44.34	81.4
10.3	60.69	14.7	20.71	40.1	42.37	97.1	40.64	43.4	44.27	82.8
20.3	60.59	14.7	20.60	40.4	41.65	98.5	40.52	44.1	44.16	84.0
30.3	60.46	14.7	20.46	40.6	40.85	99.4	40.36	44.5	44.03	84.9
Feb. 9.3	60.30	14.5	20.29	40.6	40.01	99.7	40.17	44.6	43.88	85.5
19.2	60.13	14.2	20.10	40.4	39.15	99.4	39.95	44.5	43.71	85.8
29.2	59.95	13.8	19.90	40.0	38.29	98.6	39.73	44.1	43.53	85.9
Mar. 10.2	59.77	13.3	19.71	39.4	37.46	97.2	39.51	43.5	43.35	85.6
20.2	59.61	12.8	19.53	38.7	36.68	95.4	39.31	42.6	43.19	85.1
30.1	59.48	12.2	19.38	37.9	35.97	93.0	39.14	41.6	43.05	84.2
Apr. 9.1	59.38	11.7	19.26	37.1	35.35	90.3	39.00	40.5	42.93	83.1
19.1	59.32	11.3	19.19	36.3	34.84	87.2	38.92	39.3	42.85	81.7
29.1	59.30	10.9	19.17	35.6	34.44	83.9	38.80	38.2	42.81	80.1
May 9.0	59.34	10.7	19.20	34.9	34.18	80.4	38.91	37.1	42.82	78.2
19.0	59.43	10.7	19.29	34.4	34.05	76.8	39.00	36.1	42.87	76.1
29.0	59.56	10.8	19.42	34.0	34.07	73.1	39.14	35.3	42.97	73.9
June 7.9	59.74	11.1	19.61	33.9	34.22	69.4	39.34	34.6	43.11	71.6
17.9	59.97	11.6	19.84	33.9	34.52	65.9	39.59	34.2	43.29	69.2
27.9	60.22	12.3	20.11	34.2	34.94	62.6	39.88	34.1	43.51	66.9
July 7.9	60.51	13.2	20.41	34.7	35.47	59.6	40.20	34.2	43.75	64.6
17.8	60.82	14.2	20.73	35.3	36.11	57.0	40.55	34.5	44.02	62.4
27.8	61.13	15.3	21.07	36.2	36.84	54.9	40.91	35.0	44.31	60.4
Aug. 6.8	61.46	16.5	21.41	37.2	37.63	53.3	41.29	35.8	44.60	58.7
16.8	61.79	17.7	21.76	38.2	38.46	52.2	41.67	36.7	44.90	57.2
26.7	62.11	19.0	22.10	39.4	39.30	51.8	42.04	37.9	45.20	56.1
Sept. 5.7	62.42	20.2	22.44	40.7	40.14	52.0	42.41	39.1	45.49	55.4
15.7	62.71	21.4	22.76	41.9	40.94	52.9	42.76	40.5	45.76	55.1
25.6	62.99	22.5	23.06	43.2	41.68	54.3	43.09	41.9	46.02	55.2
Oct. 5.6	63.25	23.5	23.34	44.5	42.33	56.3	43.40	43.4	46.26	55.7
15.6	63.49	24.4	23.59	45.7	42.88	58.7	43.69	44.9	46.48	56.5
25.6	63.69	25.2	23.82	46.9	43.31	61.5	43.94	46.5	46.68	57.7
Nov. 4.5	63.87	25.9	24.02	48.0	43.59	64.6	44.16	48.1	46.84	59.1
14.5	64.02	26.5	24.19	49.1	43.73	67.9	44.35	49.6	46.97	60.7
24.5	64.14	27.1	24.32	50.1	43.72	71.2	44.49	51.1	47.07	62.4
Dec. 4.5	64.22	27.5	24.41	51.0	43.55	74.4	44.59	52.5	47.14	64.2
14.4	64.26	27.9	24.46	51.9	43.24	77.4	44.64	53.8	47.17	65.9
24.4	64.26	28.2	24.46	52.6	42.79	80.1	44.65	55.0	47.16	67.5
34.4	64.22	28.4	24.42	53.2	42.22	82.4	44.60	56.0	47.12	69.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	A' Tauri.		ε Persei.		α' Eridani.		γ Tauri.		ε Tauri.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 3 59	° ' " +21 49	h m 4 1	° ' " +47 27	h m 4 7	° ' " - 7 4	h m 4 14	° ' " +15 24	h m 4 23	° ' " +18 58
Jan. 0.4	15.27	49.8	58.99	65.8	22.57	45.4	33.44	18.1	14.67	34.1
10.4	15.22	49.9	58.90	67.1	22.52	46.6	33.40	17.9	14.64	34.1
20.4	15.13	49.9	58.76	68.1	22.43	47.6	33.33	17.6	14.57	34.0
30.3	15.01	49.8	58.57	68.8	22.31	48.4	33.22	17.4	14.46	33.9
Feb. 9.3	14.86	49.6	58.35	69.2	22.17	49.0	33.08	17.2	14.32	33.8
19.3	14.69	49.4	58.10	69.3	22.01	49.4	32.92	17.0	14.16	33.7
29.3	14.51	49.1	57.84	69.0	21.83	49.5	32.74	16.7	13.99	33.5
Mar. 10.2	14.34	48.8	57.58	68.4	21.66	49.4	32.57	16.5	13.81	33.2
20.2	14.17	48.4	57.34	67.5	21.50	49.1	32.40	16.3	13.64	33.0
30.2	14.03	48.0	57.13	66.4	21.35	48.5	32.26	16.1	13.48	32.7
Apr. 9.1	13.91	47.6	56.96	65.1	21.23	47.7	32.14	16.0	13.36	32.5
19.1	13.84	47.3	56.85	63.6	21.15	46.7	32.06	16.0	13.27	32.4
29.1	13.81	47.0	56.80	62.1	21.11	45.4	32.02	16.2	13.22	32.3
May 9.0	13.83	46.9	56.81	60.6	21.11	43.9	32.02	16.4	13.21	32.4
19.0	13.90	47.0	56.88	59.2	21.15	42.2	32.07	16.8	13.26	32.6
29.0	14.02	47.2	57.03	57.9	21.24	40.4	32.17	17.4	13.35	32.9
June 8.0	14.18	47.5	57.23	56.9	21.37	38.4	32.31	18.1	13.49	33.3
17.9	14.39	48.1	57.49	56.0	21.54	36.4	32.49	18.9	13.67	33.9
27.9	14.63	48.8	57.80	55.4	21.75	34.3	32.71	19.9	13.89	34.7
July 7.9	14.90	49.6	58.15	55.0	21.99	32.2	32.96	20.9	14.14	35.5
17.9	15.19	50.6	58.53	54.9	22.25	30.2	33.24	22.1	14.41	36.5
27.8	15.50	51.7	58.93	55.1	22.52	28.4	33.53	23.2	14.70	37.5
Aug. 6.8	15.82	52.8	59.35	55.6	22.81	26.7	33.83	24.4	15.01	38.5
16.8	16.14	53.9	59.77	56.3	23.11	25.3	34.14	25.6	15.32	39.5
26.8	16.46	55.0	60.19	57.3	23.40	24.1	34.45	26.6	15.64	40.5
Sept. 5.7	16.77	56.1	60.61	58.4	23.69	23.3	34.75	27.6	15.95	41.4
15.7	17.07	57.1	61.01	59.7	23.97	22.8	35.05	28.4	16.25	42.3
25.7	17.36	58.1	61.39	61.2	24.23	22.7	35.33	29.1	16.54	43.0
Oct. 5.6	17.62	58.9	61.75	62.9	24.48	22.9	35.60	29.6	16.82	43.6
15.6	17.87	59.6	62.08	64.6	24.71	23.5	35.84	30.0	17.07	44.1
25.6	18.09	60.2	62.37	66.4	24.91	24.3	36.07	30.2	17.31	44.4
Nov. 4.6	18.29	60.8	62.63	68.3	25.09	25.4	36.27	30.3	17.53	44.7
14.5	18.45	61.2	62.85	70.2	25.24	26.7	36.45	30.4	17.71	44.9
24.5	18.58	61.6	63.02	72.1	25.36	28.1	36.59	30.3	17.87	45.0
Dec. 4.5	18.68	61.9	63.14	73.9	25.44	29.5	36.70	30.2	17.99	45.0
14.4	18.74	62.1	63.21	75.7	25.49	31.0	36.77	30.0	18.07	45.1
24.4	18.76	62.3	63.22	77.3	25.50	32.3	36.80	29.8	18.11	45.1
34.4	18.74	62.5	63.17	78.8	25.47	33.6	36.79	29.6	18.11	45.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Mensæ.		m Persei.		α Tauri. (Aldebaran.)		τ Tauri.		α Camelopardalis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 4 24	° ' " -80 25	h m 4 26	° ' " +42 51	h m 4 30	° ' " +16 19	h m 4 36	° ' " +22 46	h m 4 44	° ' " +66 11
Jan. 0.4	18.19	64.2	56.59	66.2	38.51	26.3	43.44	49.3	55.10	17.8
10.4	17.22	66.5	56.54	67.3	38.49	26.1	43.42	49.5	54.99	20.2
20.4	16.08	68.3	56.44	68.3	38.42	25.9	43.36	49.6	54.77	22.3
30.3	14.80	69.7	56.29	69.1	38.32	25.7	43.25	49.7	54.47	24.0
Feb. 9.3	13.42	70.5	56.10	69.6	38.19	25.6	43.12	49.7	54.10	25.3
19.3	11.97	70.7	55.88	69.8	38.03	25.4	42.95	49.7	53.67	26.1
29.3	10.51	70.3	55.65	69.8	37.85	25.2	42.77	49.5	53.20	26.5
Mar. 10.2	9.06	69.5	55.41	69.4	37.67	25.0	42.59	49.3	52.73	26.4
20.2	7.67	68.1	55.18	68.8	37.50	24.8	42.41	49.1	52.27	25.8
30.2	6.36	66.2	54.97	68.0	37.35	24.7	42.24	48.8	51.84	24.7
Apr. 9.1	5.17	63.9	54.80	67.0	37.22	24.6	42.10	48.5	51.47	23.3
19.1	4.12	61.2	54.67	65.8	37.12	24.5	42.00	48.2	51.17	21.5
29.1	3.25	58.2	54.60	64.6	37.07	24.6	41.94	48.0	50.97	19.5
May 9.1	2.58	55.0	54.58	63.4	37.06	24.8	41.92	47.8	50.86	17.3
19.0	2.11	51.5	54.63	62.2	37.10	25.1	41.96	47.7	50.85	15.1
29.0	1.86	48.0	54.73	61.2	37.18	25.5	42.04	47.8	50.95	12.8
June 8.0	1.83	44.4	54.90	60.2	37.31	26.1	42.17	48.0	51.15	10.7
18.0	2.02	40.9	55.11	59.5	37.48	26.9	42.34	48.3	51.44	8.7
27.9	2.44	37.6	55.38	58.9	37.69	27.7	42.55	48.8	51.83	6.9
July 7.9	3.06	34.5	55.68	58.5	37.93	28.7	42.79	49.4	52.29	5.3
17.9	3.87	31.6	56.02	58.4	38.19	29.7	43.07	50.1	52.82	4.1
27.9	4.84	29.2	56.39	58.5	38.48	30.7	43.36	50.9	53.40	3.2
Aug. 6.8	5.95	27.3	56.77	58.8	38.78	31.8	43.67	51.7	54.02	2.6
16.8	7.17	25.9	57.16	59.4	39.08	32.8	43.99	52.6	54.67	2.3
26.8	8.45	25.1	57.56	60.1	39.39	33.8	44.31	53.5	55.34	2.4
Sept. 5.7	9.76	24.9	57.95	60.9	39.70	34.7	44.63	54.3	56.02	2.9
15.7	11.05	25.3	58.33	61.9	40.00	35.4	44.94	55.0	56.70	3.7
25.7	12.28	26.4	58.70	63.1	40.29	36.0	45.24	55.8	57.35	4.9
Oct. 5.7	13.40	28.0	59.06	64.3	40.57	36.5	45.54	56.4	57.98	6.4
15.6	14.38	30.1	59.39	65.7	40.83	36.8	45.81	56.9	58.57	8.2
25.6	15.18	32.7	59.69	67.1	41.07	37.0	46.07	57.4	59.12	10.2
Nov. 4.6	15.77	35.6	59.97	68.6	41.28	37.1	46.30	57.8	59.61	12.5
14.5	16.13	38.8	60.20	70.1	41.47	37.1	46.50	58.1	60.04	14.9
24.5	16.24	42.1	60.40	71.6	41.63	37.0	46.68	58.4	60.38	17.5
Dec. 4.5	16.09	45.4	60.55	73.1	41.76	36.9	46.82	58.7	60.64	20.2
14.5	15.69	48.6	60.65	74.6	41.85	36.8	46.91	58.9	60.80	22.9
24.4	15.06	51.5	60.70	76.0	41.90	36.6	46.97	59.2	60.86	25.6
34.4	14.21	54.1	60.69	77.3	41.90	36.4	46.98	59.4	60.82	28.1

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

339

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♉ Tauri.		♊ Aurigæ.		♋ Aurigæ.		♌ Orionis.		♍ Eridani.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 4 45	° ' " +18 40	h m 4 50	° ' " +33 1	h m 4 56	° ' " +40 56	h m 4 59	° ' " +15 16	h m 5 3	° ' " - 5 12
Jan. 0.4	59.59	58.9	60.24	15.0	3.01	32.3	18.84	32.1	19.89	23.7
10.4	59.58	58.8	60.23	15.7	3.00	33.5	18.84	31.9	19.88	25.0
20.4	59.53	58.8	60.17	16.3	2.93	34.5	18.80	31.7	19.83	26.1
30.4	59.43	58.7	60.06	16.8	2.81	35.4	18.72	31.5	19.74	27.1
Feb. 9.3	59.30	58.7	59.92	17.2	2.65	36.0	18.60	31.3	19.62	27.9
19.3	59.15	58.6	59.74	17.4	2.45	36.5	18.45	31.2	19.47	28.4
29.3	58.97	58.5	59.54	17.5	2.22	36.7	18.28	31.1	19.30	28.7
Mar. 10.2	58.79	58.3	59.33	17.4	1.99	36.6	18.10	31.0	19.12	28.8
20.2	58.61	58.2	59.13	17.1	1.76	36.2	17.92	30.9	18.94	28.7
30.2	58.45	58.0	58.94	16.6	1.55	35.7	17.76	30.9	18.77	28.3
Apr. 9.2	58.31	57.8	58.78	16.1	1.36	34.9	17.61	30.9	18.62	27.7
19.1	58.20	57.7	58.65	15.4	1.22	34.0	17.50	30.9	18.50	26.9
29.1	58.14	57.7	58.57	14.7	1.12	33.0	17.42	31.1	18.42	25.9
May 9.1	58.12	57.8	58.54	14.0	1.07	31.9	17.38	31.3	18.37	24.7
19.1	58.14	57.9	58.56	13.4	1.08	30.9	17.39	31.6	18.36	23.3
29.0	58.21	58.2	58.63	12.8	1.15	29.9	17.45	32.1	18.40	21.7
June 8.0	58.32	58.6	58.76	12.4	1.28	28.9	17.55	32.7	18.49	20.0
18.0	58.48	59.1	58.93	12.1	1.46	28.1	17.70	33.4	18.61	18.2
27.9	58.68	59.8	59.14	11.9	1.69	27.5	17.88	34.2	18.77	16.3
July 7.9	58.91	60.6	59.40	11.9	1.96	27.0	18.10	35.0	18.97	14.4
17.9	59.17	61.4	59.68	12.0	2.27	26.8	18.34	35.9	19.19	12.5
27.9	59.45	62.3	59.99	12.3	2.60	26.7	18.61	36.9	19.43	10.8
Aug. 6.8	59.75	63.2	60.32	12.7	2.96	26.8	18.89	37.8	19.70	9.2
16.8	60.06	64.1	60.66	13.2	3.33	27.0	19.19	38.7	19.98	7.8
26.8	60.37	64.9	61.01	13.8	3.71	27.4	19.49	39.5	20.26	6.7
Sept. 5.8	60.68	65.7	61.36	14.5	4.10	28.0	19.80	40.3	20.55	5.9
15.7	60.99	66.4	61.71	15.2	4.48	28.6	20.10	40.9	20.84	5.4
25.7	61.29	67.0	62.05	15.9	4.85	29.4	20.40	41.3	21.12	5.2
Oct. 5.7	61.57	67.4	62.38	16.7	5.22	30.3	20.68	41.6	21.39	5.4
15.6	61.85	67.8	62.69	17.5	5.56	31.3	20.96	41.8	21.66	5.9
25.6	62.10	68.0	62.98	18.3	5.89	32.4	21.22	41.8	21.90	6.7
Nov. 4.6	62.34	68.2	63.25	19.1	6.19	33.5	21.46	41.7	22.13	7.8
14.6	62.55	68.2	63.49	19.9	6.46	34.7	21.68	41.5	22.33	9.1
24.5	62.73	68.2	63.69	20.8	6.69	36.0	21.86	41.3	22.50	10.5
Dec. 4.5	62.87	68.2	63.86	21.6	6.87	37.3	22.02	41.0	22.64	12.0
14.5	62.98	68.2	63.98	22.5	7.01	38.6	22.13	40.7	22.75	13.5
24.5	63.04	68.1	64.05	23.3	7.09	39.9	22.21	40.4	22.81	15.0
34.4	63.06	68.1	64.08	24.1	7.12	41.2	22.24	40.2	22.83	16.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Aurigæ. (<i>Capella</i> .)		β Orionis. (<i>Rigel</i> .)		τ Orionis.		β Tauri.		χ Aurigæ.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 5 9	° ' " +45 54	h m 5 10	° ' " - 8 18	h m 5 13	° ' " - 6 56	h m 5 20	° ' " +28 31	h m 5 26	° ' " +32 7
Jan. 0.4	53.87 s.	18.9 "	7.28 s.	33.1 "	8.66 s.	42.1 "	28.76 s.	47.5 "	44.61 s.	27.0 "
10.4	53.87 .00	20.3 1.4	7.28 .00	34.6 1.5	8.66 .00	43.5 1.4	28.78 .02	48.0 0.5	44.64 .03	27.7 0.7
20.4	53.81 .06	21.7 1.4	7.23 .05	35.9 1.3	8.62 .04	44.8 1.3	28.75 .03	48.5 0.5	44.62 .02	28.4 0.7
30.4	53.69 .12	22.8 1.1	7.14 .09	37.0 1.1	8.53 .09	45.9 1.1	28.68 .07	48.9 0.4	44.54 .08	29.0 0.6
Feb. 9.3	53.52 .17	23.7 0.9	7.02 .12	37.9 0.9	8.41 .12	46.7 0.8	28.56 .12	49.3 0.4	44.42 .12	29.5 0.5
	53.52 .21	23.7 0.7	7.02 .15	37.9 0.6	8.41 .14	46.7 0.6	28.56 .16	49.3 0.2	44.42 .16	29.5 0.4
19.3	53.31 .24	24.4 0.4	6.87 .17	38.5 0.4	8.27 .17	47.3 0.4	28.40 .18	49.5 0.2	44.26 .19	29.9 0.3
29.3	53.07 .26	24.8 0.0	6.70 .18	38.9 0.1	8.10 .18	47.7 0.1	28.22 .19	49.7 0.0	44.07 .20	30.2 0.1
Mar. 10.3	52.81 .26	24.8 0.3	6.52 .19	39.0 0.2	7.92 .18	47.8 0.1	28.03 .20	49.7 0.1	43.87 .21	30.3 0.1
20.2	52.55 .24	24.5 0.5	6.33 .17	38.8 0.4	7.74 .18	47.7 0.4	27.83 .19	49.6 0.2	43.66 .19	30.2 0.2
30.2	52.31 .21	24.0 0.8	6.16 .16	38.4 0.6	7.56 .15	47.3 0.6	27.64 .17	49.4 0.3	43.47 .18	30.0 0.3
Apr. 9.2	52.10 .18	23.2 1.0	6.00 .12	37.8 0.9	7.41 .13	46.7 0.8	27.47 .14	49.1 0.4	43.29 .15	29.7 0.5
19.1	51.92 .12	22.2 1.1	5.88 .10	36.9 1.1	7.28 .09	45.9 1.1	27.33 .10	48.7 0.4	43.14 .11	29.2 0.5
29.1	51.80 .07	21.1 1.3	5.78 .05	35.8 1.3	7.19 .06	44.8 1.3	27.23 .05	48.3 0.4	43.03 .06	28.7 0.6
May 9.1	51.73 .01	19.8 1.3	5.73 .01	34.5 1.6	7.13 .02	43.5 1.4	27.18 .01	47.9 0.4	42.97 .02	28.1 0.5
19.1	51.72 .06	18.5 1.3	5.72 .03	32.9 1.7	7.11 .03	42.1 1.7	27.17 .04	47.5 0.3	42.95 .03	27.6 0.5
29.0	51.78 .11	17.2 1.2	5.75 .07	31.2 1.9	7.14 .07	40.4 1.8	27.21 .09	47.2 0.2	42.98 .09	27.1 0.5
June 8.0	51.89 .18	16.0 1.1	5.82 .11	29.3 2.0	7.21 .12	38.6 1.9	27.30 .13	47.0 0.2	43.07 .13	26.6 0.4
18.0	52.07 .23	14.9 1.0	5.93 .15	27.3 2.0	7.33 .15	36.7 1.9	27.43 .18	46.8 0.1	43.20 .18	25.2 0.3
28.0	52.30 .27	13.9 0.9	6.08 .19	25.3 2.0	7.48 .18	34.8 1.9	27.61 .22	46.7 0.1	43.38 .22	25.9 0.2
July 7.9	52.57 .32	13.0 0.6	6.27 .22	23.3 1.9	7.66 .22	32.9 1.9	27.83 .25	46.8 0.1	43.60 .26	25.7 0.1
17.9	52.89 .35	12.4 0.4	6.49 .24	21.4 1.9	7.88 .24	31.0 1.8	28.08 .28	46.9 0.3	43.86 .28	25.6 0.1
27.9	53.24 .37	12.0 0.3	6.73 .26	19.5 1.7	8.12 .26	29.2 1.7	28.36 .30	47.2 0.3	44.14 .31	25.7 0.1
Aug. 6.8	53.61 .39	11.7 0.0	6.99 .27	17.8 1.4	8.38 .27	27.5 1.4	28.66 .32	47.5 0.4	44.45 .32	25.8 0.2
16.8	54.00 .41	11.7 0.1	7.26 .29	16.4 1.2	8.65 .28	26.1 1.1	28.98 .33	47.9 0.4	44.77 .34	26.0 0.3
26.8	54.41 .41	11.8 0.3	7.55 .29	15.2 0.8	8.93 .29	25.0 0.9	29.31 .33	48.3 0.4	45.11 .34	26.3 0.3
Sept. 5.8	54.82 .42	12.1 0.5	7.84 .29	14.4 0.5	9.22 .29	24.1 0.5	29.64 .33	48.7 0.5	45.45 .35	26.6 0.4
15.7	55.24 .41	12.6 0.7	8.13 .28	13.9 0.2	9.51 .28	23.6 0.1	29.97 .33	49.2 0.4	45.80 .34	27.0 0.4
25.7	55.65 .40	13.3 0.8	8.41 .28	13.7 0.3	9.79 .28	23.5 0.2	30.30 .33	49.6 0.4	46.14 .34	27.4 0.4
Oct. 5.7	56.05 .38	14.1 1.0	8.69 .26	14.0 0.6	10.07 .27	23.7 0.5	30.63 .31	50.0 0.4	46.48 .33	27.8 0.5
15.7	56.43 .36	15.1 1.1	8.95 .25	14.6 0.9	10.34 .25	24.2 0.9	30.94 .31	50.4 0.4	46.81 .31	28.3 0.4
25.6	56.79 .34	16.2 1.2	9.20 .23	15.5 1.2	10.59 .23	25.1 1.2	31.25 .28	50.8 0.4	47.12 .30	28.7 0.5
Nov. 4.6	57.13 .30	17.4 1.4	9.43 .21	16.7 1.4	10.82 .21	26.3 1.4	31.53 .26	51.2 0.4	47.42 .27	29.2 0.6
14.6	57.43 .27	18.8 1.4	9.64 .17	18.1 1.6	11.03 .18	27.7 1.5	31.79 .23	51.6 0.4	47.69 .25	29.8 0.6
24.5	57.70 .21	20.2 1.5	9.81 .15	19.7 1.7	11.21 .15	29.2 1.6	32.02 .19	52.0 0.4	47.94 .20	30.4 0.6
Dec. 4.5	57.91 .17	21.7 1.6	9.96 .11	21.4 1.7	11.36 .11	30.8 1.7	32.21 .15	52.4 0.5	48.14 .17	31.0 0.7
14.5	58.08 .10	23.3 1.5	10.07 .06	23.1 1.7	11.47 .07	32.5 1.6	32.36 .10	52.9 0.5	48.31 .11	31.7 0.7
24.5	58.18 .05	24.8 1.5	10.13 .03	24.8 1.6	11.54 .03	34.1 1.5	32.46 .06	53.4 0.5	48.42 .07	32.4 0.7
34.4	58.23	26.3	10.16	26.4	11.57	35.6	32.52	53.9	48.49	33.1

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

341

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♂ Orionis.		Groombridge 966.		α Leporis.		ε Orionis.		Groombridge 944.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m 5 27	° ' " - 0 21	h m 5 27	° ' " +74 58	h m 5 28	° ' " - 17 53	h m 5 31	° ' " - 1 15	h m 5 32	° ' " +85 8
Jan. 0.5	18.66	65.2	27.50	64.9	40.84	22.3	33.00	41.4	33.68	71.5
10.4	18.67	66.3	27.43	67.7	40.84	24.3	33.02	42.6	33.31	74.7
20.4	18.65	67.3	27.19	70.4	40.79	26.1	32.99	43.6	32.44	77.7
30.4	18.58	68.1	26.80	72.8	40.71	27.6	32.92	44.5	31.11	80.4
Feb. 9.3	18.47	68.8	26.27	74.8	40.58	28.9	32.82	45.3	29.38	82.7
19.3	18.33	69.3	25.64	76.3	40.42	29.8	32.68	45.8	27.32	84.5
29.3	18.17	69.6	24.93	77.3	40.24	30.4	32.52	46.1	25.02	85.7
Mar. 10.3	18.00	69.8	24.17	77.8	40.05	30.6	32.34	46.3	22.60	86.3
20.2	17.82	69.7	23.40	77.7	39.85	30.5	32.16	46.2	20.14	86.3
30.2	17.65	69.5	22.67	77.1	39.66	30.0	31.99	46.0	17.75	85.7
Apr. 9.2	17.49	69.1	21.99	76.0	39.48	29.2	31.83	45.6	15.54	84.6
19.2	17.36	68.5	21.40	74.4	39.33	28.2	31.70	45.0	13.59	83.0
29.1	17.26	67.7	20.93	72.5	39.21	26.8	31.60	44.2	11.96	80.9
May 9.1	17.20	66.8	20.59	70.3	39.13	25.1	31.53	43.2	10.73	78.5
19.1	17.18	65.7	20.40	67.9	39.09	23.2	31.51	42.1	9.93	75.8
June 8.0	17.20	64.4	20.37	65.4	39.09	21.1	31.52	40.8	9.59	73.0
18.0	17.26	63.0	20.49	62.8	39.14	18.9	31.58	39.3	9.71	70.1
28.0	17.37	61.5	20.76	60.2	39.23	16.5	31.68	37.8	10.29	67.2
July 7.9	17.51	60.0	21.17	57.8	39.36	14.1	31.82	36.2	11.31	64.4
17.9	17.69	58.4	21.72	55.6	39.52	11.7	32.00	34.6	12.75	61.8
Aug. 6.9	17.89	56.8	22.39	53.6	39.72	9.4	32.20	33.0	14.57	59.5
16.8	18.13	55.3	23.16	51.9	39.95	7.2	32.43	31.4	16.72	57.4
26.8	18.38	53.9	24.02	50.5	40.20	5.2	32.68	30.0	19.16	55.7
Sept. 5.8	18.65	52.7	24.95	49.5	40.47	3.5	32.94	28.8	21.83	54.4
15.7	18.93	51.7	25.93	48.8	40.75	2.2	33.22	27.8	24.69	53.5
Oct. 4.5	19.21	50.9	26.95	48.6	41.04	1.2	33.51	27.0	27.68	53.1
14.5	19.50	50.4	27.99	48.7	41.33	0.7	33.80	26.5	30.74	53.1
24.5	19.79	50.2	29.02	49.2	41.62	0.6	34.09	26.3	33.81	53.5
Nov. 3.4	20.07	50.3	30.04	50.2	41.91	1.0	34.37	26.4	36.84	54.4
13.4	20.35	50.7	31.03	51.5	42.19	1.8	34.65	26.9	39.75	55.7
Dec. 2.5	20.61	51.4	31.96	53.2	42.45	3.0	34.91	27.6	42.50	57.5
12.5	20.86	52.3	32.81	55.2	42.69	4.6	35.16	28.5	45.01	59.7
22.5	21.08	53.4	33.57	57.5	42.91	6.5	35.38	29.6	47.22	62.3
32.5	21.28	54.6	34.22	60.1	43.10	8.6	35.58	30.9	49.07	65.2
Jan. 1.5	21.45	55.9	34.73	63.0	43.26	10.7	35.75	32.3	50.50	68.3
11.5	21.58	57.2	35.09	65.9	43.38	13.0	35.89	33.7	51.48	71.5
21.5	21.67	58.5	35.30	68.9	43.45	15.2	35.98	35.0	51.96	74.9
31.4	21.71	59.7	35.34	71.9	43.48	17.3	36.03	36.3	51.93	78.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Columbae.		κ Orionis.		δ Doradus.		ν Aurigae.		α Orionis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 5 36	° ' " -34 7	h m 5 43	° ' " -9 41	h m 5 44	° ' " -65 45	h m 5 45	° ' " +39 7	h m 5 50	° ' " +7 23
Jan. 0.5	19.92	29.5	23.99	71.8	39.57	79.9	7.14	18.7	11.74	21.9
10.4	19.90	32.2	24.01	73.5	39.39	83.1	7.19	19.8	11.78	21.1
20.4	19.83	34.6	23.99	75.0	39.12	86.0	7.18	20.9	11.78	20.4
30.4	19.71	36.6	23.93	76.3	38.76	88.5	7.11	21.9	11.73	19.9
Feb. 9.4	19.54	38.3	23.82	77.3	38.33	90.6	6.99	22.8	11.64	19.5
19.3	19.34	39.5	23.68	78.1	37.84	92.2	6.83	23.5	11.51	19.2
29.3	19.12	40.3	23.52	78.6	37.30	93.2	6.63	24.1	11.36	19.0
Mar. 10.3	18.88	40.7	23.34	78.9	36.74	93.7	6.41	24.4	11.19	18.9
20.2	18.64	40.6	23.15	78.9	36.17	93.7	6.19	24.4	11.01	18.9
30.2	18.40	40.0	22.97	78.6	35.60	93.1	5.96	24.3	10.84	19.1
Apr. 9.2	18.18	39.1	22.80	78.0	35.07	92.0	5.76	23.9	10.68	19.3
19.2	17.98	37.7	22.65	77.2	34.57	90.4	5.58	23.4	10.54	19.7
29.1	17.82	35.9	22.53	76.2	34.13	88.3	5.45	22.7	10.43	20.1
May 9.1	17.69	33.8	22.45	74.9	33.75	85.8	5.36	21.9	10.35	20.7
19.1	17.61	31.4	22.41	73.4	33.45	83.0	5.32	21.0	10.32	21.4
29.1	17.58	28.7	22.41	71.8	33.23	79.9	5.33	20.1	10.32	22.2
June 8.0	17.60	25.9	22.45	70.0	33.11	76.6	5.40	19.2	10.37	23.1
18.0	17.66	22.9	22.54	68.1	33.07	73.1	5.52	18.4	10.46	24.1
28.0	17.77	19.9	22.66	66.0	33.12	69.6	5.69	17.6	10.59	25.2
July 7.9	17.93	16.9	22.81	64.0	33.27	66.1	5.91	16.9	10.76	26.3
17.9	18.12	14.1	23.00	62.0	33.50	62.7	6.16	16.4	10.96	27.4
27.9	18.35	11.4	23.22	60.2	33.81	59.6	6.45	16.0	11.18	28.5
Aug. 6.9	18.61	9.0	23.46	58.5	34.20	56.9	6.77	15.7	11.42	29.5
16.8	18.89	7.0	23.72	57.0	34.65	54.5	7.11	15.5	11.68	30.4
26.8	19.19	5.4	23.99	55.8	35.15	52.7	7.47	15.4	11.96	31.2
Sept. 5.8	19.50	4.3	24.27	54.9	35.68	51.4	7.83	15.4	12.25	31.8
15.8	19.82	3.7	24.56	54.4	36.24	50.7	8.21	15.5	12.54	32.2
25.7	20.14	3.6	24.85	54.2	36.81	50.7	8.58	15.8	12.83	32.3
Oct. 5.7	20.45	4.2	25.13	54.5	37.37	51.3	8.96	16.1	13.13	32.3
15.7	20.76	5.3	25.41	55.1	37.90	52.6	9.33	16.5	13.42	32.0
25.6	21.05	6.8	25.68	56.1	38.39	54.4	9.68	17.1	13.70	31.5
Nov. 4.6	21.31	8.9	25.93	57.4	38.83	56.8	10.02	17.7	13.96	30.8
14.6	21.55	11.3	26.16	58.9	39.20	59.7	10.33	18.4	14.21	30.0
24.6	21.75	14.0	26.37	60.6	39.48	62.9	10.61	19.3	14.44	29.1
Dec. 4.5	21.91	16.8	26.55	62.4	39.67	66.3	10.85	20.2	14.63	28.2
14.5	22.02	19.8	26.68	64.3	39.76	69.8	11.05	21.2	14.79	27.2
24.5	22.08	22.7	26.78	66.2	39.75	73.3	11.20	22.3	14.91	26.3
34.5	22.09	25.4	26.84	67.9	39.64	76.7	11.29	23.5	14.98	25.5

FIXED STARS, 1908.
(CONSTANTS OF STRUVE AND PETERS.)

343

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Aurigæ.		θ Aurigæ.		ν Orionis.		22 Camelop. (H.).		η Geminorum.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 5 52	° ' " +44 56	h m 5 53	° ' " +37 12	h m 6 2	° ' " +14 46	h m 6 8	° ' " +69 20	h m 6 9	° ' " +22 31
Jan. 0.5	47.30	18.5	27.21	22.7	19.44	44.8	44.30	70.9	19.77	59.7
10.4	47.36	20.0	27.27	23.7	19.50	44.4	44.39	73.6	19.84	59.8
20.4	47.35	21.4	27.27	24.7	19.51	44.2	44.35	76.2	19.86	60.0
30.4	47.28	22.8	27.21	25.6	19.48	44.0	44.18	78.6	19.83	60.2
Feb. 9.4	47.16	23.9	27.10	26.5	19.40	43.9	43.89	80.8	19.75	60.5
19.3	46.98	24.9	26.95	27.2	19.28	43.9	43.51	82.7	19.63	60.8
29.3	46.76	25.6	26.76	27.7	19.13	43.9	43.05	84.1	19.48	61.0
Mar. 10.3	46.52	26.1	26.55	28.1	18.96	43.9	42.54	85.0	19.30	61.2
20.3	46.27	26.2	26.33	28.2	18.78	44.0	42.00	85.5	19.12	61.4
30.2	46.02	26.1	26.11	28.1	18.60	44.1	41.45	85.4	18.93	61.5
Apr. 9.2	45.79	25.7	25.91	27.9	18.43	44.2	40.94	84.9	18.75	61.5
19.2	45.59	25.1	25.74	27.5	18.29	44.4	40.47	83.9	18.60	61.5
29.1	45.43	24.2	25.60	26.9	18.17	44.6	40.07	82.5	18.47	61.5
May 9.1	45.32	23.2	25.50	26.2	18.09	44.8	39.76	80.7	18.38	61.4
19.1	45.26	22.1	25.46	25.4	18.04	45.2	39.55	78.7	18.33	61.4
29.1	45.26	20.9	25.47	24.6	18.04	45.6	39.45	76.5	18.33	61.4
June 8.0	45.32	19.7	25.53	23.8	18.09	46.0	39.46	74.1	18.37	61.4
18.0	45.44	18.5	25.64	23.1	18.17	46.6	39.58	71.7	18.45	61.5
28.0	45.62	17.4	25.80	22.4	18.30	47.2	39.81	69.4	18.58	61.6
July 8.0	45.84	16.4	26.00	21.7	18.46	47.8	40.14	67.1	18.74	61.8
17.9	46.11	15.5	26.24	21.2	18.65	48.5	40.57	65.0	18.94	62.0
27.9	46.41	14.7	26.52	20.8	18.87	49.2	41.08	63.0	19.17	62.2
Aug. 6.9	46.75	14.1	26.82	20.5	19.12	49.8	41.66	61.3	19.42	62.5
16.8	47.11	13.6	27.15	20.3	19.38	50.4	42.31	59.4	19.69	62.7
26.8	47.49	13.3	27.49	20.2	19.66	50.9	43.00	58.7	19.98	62.9
Sept. 5.8	47.89	13.1	27.85	20.2	19.95	51.3	43.74	57.9	20.28	63.1
15.8	48.29	13.1	28.21	20.3	20.25	51.5	44.51	57.4	20.60	63.2
25.7	48.70	13.2	28.58	20.4	20.56	51.6	45.29	57.2	20.92	63.2
Oct. 5.7	49.11	13.5	28.95	20.6	20.86	51.6	46.07	57.5	21.24	63.2
15.7	49.51	14.0	29.31	20.9	21.16	51.4	46.85	58.1	21.56	63.1
25.7	49.90	14.6	29.66	21.3	21.46	51.0	47.60	59.1	21.87	62.9
Nov. 4.6	50.28	15.4	29.99	21.7	21.74	50.6	48.32	60.4	22.17	62.7
14.6	50.62	16.3	30.31	22.3	22.01	50.1	48.98	62.1	22.45	62.5
24.6	50.93	17.4	30.59	23.0	22.25	49.5	49.57	64.1	22.71	62.3
Dec. 4.5	51.21	18.6	30.84	23.8	22.47	49.0	50.08	66.3	22.95	62.1
14.5	51.43	19.9	31.04	24.7	22.64	48.4	50.49	68.8	23.14	62.0
24.5	51.59	21.4	31.19	25.6	22.78	47.9	50.78	71.4	23.29	62.0
34.5	51.69	22.8	31.29	26.6	22.87	47.5	50.95	74.1	23.40	62.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Geminorum.		γ^h Aurigæ.		α Argus. (Canopus.)		τ Geminorum.		γ Geminorum.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 6 17	° ' " +22 33	h m 6 17	° ' " +49 19	h m 6 21	° ' " -52 38	h m 6 23	° ' " +20 16	h m 6 32	° ' " +16 28
Jan. 0.5	23.98	38.3	49.45	66.4	56.40	46.6	30.31	12.6	24.14	39.1
10.5	24.06	38.4	49.55	68.1	56.38	50.0	30.40	12.5	24.23	38.8
20.4	24.09	38.6	49.57	69.8	56.29	53.1	30.43	12.6	24.27	38.6
30.4	24.07	38.8	49.52	71.4	56.13	55.9	30.41	12.7	24.26	38.4
Feb. 9.4	24.00	39.1	49.41	72.9	55.91	58.4	30.34	12.8	24.20	38.4
19.4	23.88	39.3	49.24	74.2	55.64	60.4	30.24	13.0	24.10	38.5
29.3	23.73	39.6	49.02	75.2	55.32	61.9	30.09	13.2	23.96	38.6
Mar. 10.3	23.56	39.8	48.77	76.0	54.98	62.9	29.93	13.4	23.80	38.7
20.3	23.38	40.0	48.50	76.4	54.62	63.4	29.75	13.6	23.63	38.9
30.2	23.19	40.1	48.22	76.5	54.26	63.3	29.56	13.8	23.45	39.1
Apr. 9.2	23.01	40.2	47.96	76.3	53.91	62.8	29.39	13.9	23.28	39.3
19.2	22.85	40.2	47.73	75.7	53.58	61.7	29.23	14.0	23.12	39.5
29.2	22.72	40.3	47.53	74.9	53.28	60.2	29.10	14.1	22.98	39.7
May 9.1	22.63	40.2	47.38	73.9	53.02	58.2	29.00	14.2	22.88	39.9
19.1	22.58	40.2	47.29	72.7	52.81	55.8	28.94	14.3	22.82	40.1
29.1	22.57	40.2	47.25	71.3	52.66	53.1	28.92	14.4	22.80	40.4
June 8.1	22.60	40.2	47.28	69.9	52.56	50.1	28.95	14.5	22.81	40.8
18.0	22.67	40.2	47.37	68.5	52.52	46.9	29.02	14.7	22.87	41.2
28.0	22.79	40.3	47.52	67.0	52.55	43.6	29.13	14.9	22.97	41.6
July 8.0	22.95	40.4	47.72	65.6	52.63	40.3	29.28	15.1	23.10	42.0
17.9	23.14	40.6	47.97	64.3	52.77	37.0	29.46	15.4	23.27	42.4
27.9	23.36	40.8	48.27	63.2	52.97	33.8	29.67	15.7	23.47	42.9
Aug. 6.9	23.61	41.0	48.61	62.1	53.22	30.9	29.91	15.9	23.70	43.3
16.9	23.87	41.2	48.98	61.2	53.52	28.4	30.17	16.2	23.94	43.7
26.8	24.16	41.3	49.37	60.5	53.85	26.2	30.45	16.4	24.21	43.9
Sept. 5.8	24.46	41.4	49.79	60.0	54.21	24.6	30.74	16.5	24.50	44.1
15.8	24.77	41.5	50.22	59.6	54.60	23.6	31.04	16.6	24.79	44.2
25.8	25.09	41.4	50.66	59.4	55.00	23.2	31.36	16.5	25.09	44.1
Oct. 5.7	25.41	41.3	51.10	59.4	55.41	23.4	31.67	16.3	25.40	43.9
15.7	25.73	41.1	51.55	59.6	55.82	24.2	31.99	16.1	25.71	43.5
25.7	26.05	40.9	51.98	60.0	56.21	25.6	32.30	15.8	26.02	43.0
Nov. 4.6	26.35	40.6	52.40	60.7	56.57	27.7	32.61	15.4	26.32	42.5
14.6	26.64	40.4	52.80	61.5	56.90	30.2	32.90	15.0	26.61	41.9
24.6	26.91	40.1	53.17	62.6	57.18	33.1	33.17	14.6	26.88	41.3
Dec. 4.6	27.15	39.9	53.49	63.9	57.41	36.4	33.41	14.2	27.12	40.6
14.5	27.36	39.8	53.76	65.3	57.57	39.8	33.61	13.9	27.33	40.1
24.5	27.52	39.8	53.97	66.9	57.67	43.3	33.78	13.7	27.50	39.6
34.5	27.63	39.8	54.11	68.5	57.70	46.7	33.90	13.6	27.63	39.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ϵ Geminorum.		ψ Aurigæ.		α Canis Majoris. (Sirius.)		θ Geminorum.		ζ Mensæ.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 6 38	° ' " +25 13	h m 6 40	° ' " +43 40	h m 6 41	° ' " -16 35	h m 6 46	° ' " +34 4	h m 6 47	° ' " -80 42
Jan. 0.5	16.63	19.3	7.08	8.1	6.08	24.3	43.94	19.2	53.25	62.3
10.5	16.73	19.6	7.20	9.4	6.15	26.6	44.06	19.9	52.97	65.8
20.5	16.78	19.9	7.26	10.8	6.17	28.7	44.12	20.7	52.43	69.1
30.4	16.78	20.2	7.25	12.2	6.14	30.6	44.12	21.6	51.66	72.2
Feb. 9.4	16.73	20.6	7.18	13.6	6.07	32.2	44.07	22.5	50.67	75.0
19.4	16.63	21.1	7.05	14.8	5.95	33.5	43.97	23.4	49.50	77.4
29.3	16.49	21.5	6.87	15.8	5.80	34.5	43.82	24.1	48.18	79.4
Mar. 10.3	16.32	21.9	6.66	16.7	5.63	35.2	43.64	24.8	46.75	80.8
20.3	16.14	22.2	6.42	17.3	5.44	35.6	43.44	25.3	45.25	81.8
30.3	15.95	22.5	6.18	17.6	5.24	35.6	43.24	25.6	43.72	82.2
Apr. 9.2	15.76	22.6	5.94	17.6	5.05	35.3	43.03	25.7	42.19	82.2
19.2	15.59	22.7	5.73	17.4	4.87	34.7	42.85	25.7	40.70	81.6
29.2	15.45	22.7	5.54	16.9	4.72	33.8	42.69	25.5	39.28	80.5
May 9.1	15.34	22.6	5.39	16.2	4.59	32.7	42.56	25.2	37.97	78.9
19.1	15.27	22.5	5.29	15.3	4.50	31.2	42.47	24.7	36.79	76.9
29.1	15.24	22.3	5.25	14.3	4.44	29.6	42.43	24.2	35.78	74.5
June 8.1	15.25	22.2	5.25	13.2	4.43	27.7	42.43	23.6	34.96	71.8
18.0	15.31	22.1	5.31	12.1	4.45	25.7	42.48	22.9	34.33	68.8
28.0	15.41	22.0	5.42	10.9	4.51	23.6	42.58	22.3	33.93	65.6
July 8.0	15.55	21.9	5.58	9.7	4.61	21.5	42.72	21.6	33.76	62.3
18.0	15.72	21.8	5.79	8.6	4.74	19.3	42.90	21.0	33.82	59.0
27.9	15.93	21.7	6.04	7.6	4.90	17.3	43.12	20.4	34.11	55.7
Aug. 6.9	16.17	21.7	6.32	6.6	5.09	15.4	43.36	19.9	34.62	52.7
16.9	16.43	21.6	6.64	5.7	5.31	13.7	43.64	19.3	35.35	49.9
26.9	16.71	21.5	6.99	5.0	5.55	12.3	43.93	18.8	36.27	47.5
Sept. 5.8	17.00	21.4	7.35	4.3	5.81	11.2	44.25	18.4	37.35	45.5
15.8	17.31	21.2	7.73	3.7	6.09	10.6	44.59	18.0	38.55	44.0
25.8	17.63	21.0	8.13	3.3	6.37	10.3	44.94	17.6	39.85	43.2
Oct. 5.7	17.96	20.7	8.53	3.0	6.66	10.5	45.29	17.2	41.20	43.0
15.7	18.29	20.4	8.94	2.9	6.96	11.2	45.65	16.9	42.54	43.5
25.7	18.62	20.1	9.35	2.9	7.25	12.2	46.01	16.6	43.83	44.6
Nov. 4.7	18.94	19.8	9.75	3.1	7.54	13.7	46.37	16.5	45.02	46.3
14.6	19.25	19.5	10.13	3.5	7.81	15.5	46.71	16.5	46.07	48.5
24.6	19.54	19.2	10.48	4.1	8.06	17.6	47.03	16.6	46.94	51.2
Dec. 4.6	19.81	19.0	10.80	4.9	8.28	19.9	47.32	16.8	47.58	54.3
14.6	20.04	19.0	11.08	5.9	8.47	22.2	47.58	17.2	47.99	57.6
24.5	20.22	19.0	11.30	7.0	8.62	24.6	47.79	17.7	48.13	61.1
34.5	20.36	19.1	11.47	8.3	8.72	27.0	47.95	18.4	48.01	64.6

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ε Canis Majoris.		ζ Geminorum.		δ Canis Majoris.		63 Aurigæ.		γ Volantis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 6 54	° ' " -28 50	h m 6 58	° ' " +20 42	h m 7 4	° ' " -26 14	h m 7 5	° ' " +39 28	h m 7 9	° ' " -70 20
Jan. 0.5	61.40	48.5	39.46	18.0	39.72	48.9	20.14	13.1	36.10	56.8
10.5	61.47	51.3	39.58	17.9	39.80	51.6	20.29	14.1	36.09	60.4
20.5	61.49	54.0	39.65	17.9	39.83	54.2	20.38	15.3	35.95	63.9
30.4	61.45	56.4	39.67	18.0	39.81	56.6	20.40	16.5	35.69	67.3
Feb. 9.4	61.37	58.6	39.63	18.2	39.74	58.7	20.37	17.7	35.32	70.3
19.4	61.24	60.4	39.55	18.5	39.63	60.5	20.27	18.8	34.85	73.0
29.4	61.07	61.8	39.43	18.8	39.48	61.9	20.13	19.9	34.29	75.3
Mar. 10.3	60.88	62.8	39.28	19.1	39.30	63.0	19.95	20.8	33.67	77.1
20.3	60.67	63.4	39.11	19.4	39.09	63.6	19.74	21.5	33.01	78.3
30.3	60.45	63.6	38.93	19.7	38.88	63.9	19.52	22.0	32.32	79.1
Apr. 9.2	60.23	63.4	38.75	20.0	38.67	63.8	19.30	22.3	31.62	79.3
19.2	60.02	62.8	38.58	20.2	38.47	63.2	19.09	22.3	30.93	79.0
29.2	59.83	61.8	38.44	20.3	38.29	62.3	18.91	22.1	30.28	78.1
May 9.2	59.67	60.5	38.32	20.5	38.13	61.1	18.76	21.7	29.68	76.8
19.1	59.54	58.8	38.24	20.6	38.00	59.5	18.65	21.1	29.13	75.0
29.1	59.45	56.8	38.19	20.7	37.91	57.7	18.58	20.4	28.66	72.8
June 8.1	59.40	54.5	38.19	20.8	37.86	55.6	18.56	19.6	28.28	70.1
18.1	59.40	52.1	38.22	20.9	37.85	53.3	18.59	18.7	27.99	67.2
28.0	59.43	49.5	38.30	21.0	37.88	50.8	18.67	17.7	27.80	64.0
July 8.0	59.50	46.9	38.41	21.1	37.95	48.3	18.80	16.7	27.72	60.7
18.0	59.62	44.2	38.56	21.2	38.05	45.8	18.97	15.7	27.75	57.4
28.0	59.77	41.7	38.74	21.3	38.19	43.3	19.17	14.7	27.89	54.0
Aug. 6.9	59.95	39.3	38.95	21.4	38.36	41.0	19.42	13.7	28.13	50.8
16.9	60.16	37.1	39.19	21.4	38.56	38.9	19.69	12.8	28.47	47.9
26.9	60.40	35.3	39.45	21.3	38.79	37.1	20.00	11.9	28.91	45.2
Sept. 5.8	60.66	33.8	39.72	21.2	39.05	35.7	20.32	11.1	29.43	43.0
15.8	60.95	32.8	40.01	21.0	39.32	34.8	20.67	10.4	30.01	41.4
25.8	61.25	32.3	40.32	20.7	39.61	34.3	21.03	9.7	30.65	40.3
Oct. 5.8	61.56	32.4	40.63	20.3	39.92	34.3	21.41	9.2	31.32	39.9
15.7	61.87	33.0	40.95	19.8	40.23	34.8	21.80	8.7	32.00	40.1
25.7	62.18	34.1	41.28	19.2	40.54	35.8	22.19	8.3	32.68	41.0
Nov. 4.7	62.49	35.6	41.60	18.6	40.84	37.3	22.57	8.1	33.32	42.6
14.7	62.78	37.6	41.91	18.0	41.13	39.3	22.95	8.1	33.91	44.7
24.6	63.05	40.0	42.20	17.4	41.40	41.6	23.30	8.3	34.43	47.3
Dec. 4.6	63.28	42.7	42.47	16.9	41.65	44.1	23.63	8.6	34.85	50.4
14.6	63.48	45.5	42.71	16.4	41.86	46.9	23.92	9.2	35.17	53.8
24.5	63.64	48.4	42.92	16.1	42.03	49.7	24.17	9.9	35.37	57.4
34.5	63.75	51.3	43.07	15.9	42.15	52.5	24.36	10.9	35.44	61.0

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

347

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	25 Camelop. (H.).		δ Geminorum.		Piazzi vii, 67.		β Canis Minoris.		α ¹ Geminorum. (Castor.)	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 7 11	° ' " +82 35	h m 7 14	° ' " +22 9	h m 7 21	° ' " +68 38	h m 7 22	° ' " + 8 28	h m 7 28	° ' " +32 5
Jan. 0.5	52.52	22.8	38.05	5.3	20.46	71.7	10.02	28.6	44.16	24.4
10.5	53.06	25.9	38.19	5.2	20.74	74.2	10.15	27.6	44.32	24.9
20.5	53.26	29.1	38.28	5.3	20.89	76.8	10.23	26.8	44.43	25.5
30.5	53.11	32.2	38.31	5.5	20.91	79.5	10.27	26.2	44.48	26.3
Feb. 9.4	52.62	35.1	38.29	5.8	20.81	82.1	10.25	25.7	44.48	27.1
19.4	51.83	37.8	38.22	6.1	20.59	84.5	10.19	25.4	44.41	28.0
29.4	50.77	40.1	38.11	6.6	20.27	86.6	10.09	25.2	44.30	28.9
Mar. 10.3	49.49	42.0	37.97	7.0	19.87	88.3	9.95	25.2	44.16	29.7
20.3	48.05	43.3	37.80	7.4	19.40	89.6	9.80	25.3	43.98	30.4
30.3	46.53	44.0	37.62	7.7	18.90	90.5	9.63	25.4	43.79	31.0
Apr. 9.3	44.98	44.2	37.44	8.0	18.39	90.9	9.46	25.7	43.59	31.4
19.2	43.47	43.8	37.27	8.3	17.89	90.7	9.30	26.1	43.40	31.7
29.2	42.07	42.9	37.12	8.5	17.43	90.1	9.15	26.5	43.23	31.8
May 9.2	40.83	41.4	36.99	8.6	17.02	89.1	9.03	27.0	43.08	31.7
19.2	39.79	39.5	36.90	8.7	16.69	87.6	8.94	27.5	42.97	31.5
29.1	38.98	37.3	36.84	8.8	16.44	85.8	8.88	28.1	42.89	31.1
June 8.1	38.44	34.7	36.83	8.8	16.29	83.8	8.85	28.8	42.86	30.7
18.1	38.18	31.9	36.85	8.8	16.24	81.5	8.86	29.5	42.87	30.2
28.0	38.20	29.0	36.91	8.8	16.28	79.1	8.91	30.2	42.92	29.6
July 8.0	38.51	26.0	37.01	8.8	16.43	76.6	8.99	31.0	43.01	29.0
18.0	39.09	23.0	37.14	8.7	16.67	74.1	9.11	31.7	43.14	28.3
28.0	39.94	20.2	37.31	8.7	17.00	71.6	9.25	32.4	43.31	27.6
Aug. 6.9	41.04	17.5	37.51	8.6	17.42	69.3	9.43	33.1	43.51	26.9
16.9	42.37	15.0	37.73	8.4	17.91	67.0	9.63	33.6	43.74	26.2
26.9	43.89	12.7	37.98	8.2	18.47	65.0	9.85	34.0	44.00	25.4
Sept. 5.9	45.58	10.8	38.25	8.0	19.09	63.2	10.09	34.2	44.28	24.7
15.8	47.42	9.2	38.54	7.6	19.76	61.6	10.36	34.2	44.59	23.9
25.8	49.37	8.0	38.84	7.2	20.48	60.4	10.64	34.0	44.91	23.2
Oct. 5.8	51.39	7.3	39.15	6.6	21.22	59.5	10.93	33.6	45.25	22.4
15.7	53.45	7.0	39.48	6.0	21.99	59.0	11.23	33.0	45.60	21.7
25.7	55.51	7.2	39.81	5.4	22.76	58.8	11.53	32.2	45.96	21.0
Nov. 4.7	57.53	7.8	40.14	4.7	23.52	59.0	11.84	31.2	46.32	20.4
14.7	59.45	8.9	40.46	4.0	24.26	59.7	12.14	30.0	46.68	19.9
24.6	61.23	10.5	40.77	3.4	24.96	60.8	12.43	28.8	47.02	19.5
Dec. 4.6	62.82	12.6	41.05	2.8	25.61	62.2	12.70	27.6	47.34	19.3
14.6	64.18	15.0	41.31	2.3	26.17	64.0	12.94	26.3	47.63	19.3
24.6	65.26	17.7	41.53	2.0	26.64	66.2	13.15	25.2	47.88	19.5
34.5	66.03	20.7	41.70	1.8	27.00	68.6	13.32	24.1	48.08	19.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Canis Minoris. (Procyon.)		β Geminorum. (Pollux.)		ϕ Geminorum.		26 Lyncis.		Groombridge 1374.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 7 34	° ' " + 5 27	h m 7 39	° ' " + 28 14	h m 7 47	° ' " + 27 0	h m 7 47	° ' " + 47 47	h m 7 49	° ' " + 74 9
Jan. 0.6	29.44	37.5	41.51	52.7	52.34	12.8	61.49	68.5	14.10	46.9
10.5	29.58	36.3	41.68	52.9	52.52	12.9	61.71	69.8	14.54	49.5
20.5	29.67	35.2	41.80	53.3	52.65	13.2	61.87	71.3	14.81	52.3
30.5	29.71	34.3	41.86	53.8	52.72	13.6	61.95	73.0	14.91	55.2
Feb. 9.4	29.70	33.6	41.86	54.5	52.73	14.2	61.96	74.7	14.85	58.0
19.4	29.65	33.1	41.81	55.2	52.69	14.8	61.90	76.4	14.63	60.7
29.4	29.55	32.8	41.71	55.9	52.61	15.5	61.77	78.0	14.26	63.2
Mar. 10.4	29.42	32.6	41.58	56.6	52.48	16.2	61.60	79.5	13.76	65.3
20.3	29.27	32.6	41.41	57.3	52.32	16.9	61.38	80.7	13.17	67.0
30.3	29.11	32.7	41.23	57.9	52.15	17.5	61.14	81.6	12.52	68.2
Apr. 9.3	28.94	32.9	41.04	58.4	51.97	18.0	60.89	82.3	11.84	68.9
19.3	28.78	33.2	40.86	58.7	51.79	18.4	60.64	82.6	11.15	69.1
29.2	28.63	33.6	40.69	58.9	51.62	18.7	60.41	82.6	10.49	68.7
May 9.2	28.50	34.1	40.55	59.0	51.48	18.8	60.20	82.3	9.89	67.8
19.2	28.40	34.7	40.43	58.9	51.36	18.8	60.03	81.7	9.37	66.5
29.1	28.33	35.4	40.35	58.8	51.28	18.7	59.91	80.9	8.94	64.8
June 8.1	28.29	36.2	40.31	58.5	51.23	18.6	59.83	79.8	8.63	62.7
18.1	28.29	37.0	40.31	58.2	51.23	18.3	59.80	78.5	8.44	60.4
28.0	28.32	37.9	40.35	57.8	51.26	18.0	59.83	77.1	8.38	57.8
July 8.0	28.39	38.7	40.43	57.4	51.33	17.6	59.91	75.6	8.45	55.1
18.0	28.49	39.6	40.54	56.9	51.44	17.2	60.04	74.0	8.65	52.3
28.0	28.62	40.4	40.69	56.4	51.58	16.8	60.21	72.4	8.97	49.5
Aug. 7.0	28.78	41.1	40.87	55.9	51.75	16.3	60.43	70.7	9.41	46.7
16.9	28.96	41.7	41.08	55.3	51.95	15.7	60.69	69.1	9.96	44.1
26.9	29.17	42.2	41.32	54.7	52.18	15.1	60.98	67.5	10.61	41.6
Sept. 5.9	29.40	42.5	41.59	54.0	52.43	14.4	61.31	66.0	11.35	39.3
15.8	29.66	42.5	41.87	53.2	52.71	13.6	61.67	64.6	12.17	37.3
25.8	29.93	42.3	42.18	52.5	53.01	12.8	62.06	63.3	13.06	35.6
Oct. 5.8	30.21	41.9	42.50	51.7	53.33	12.0	62.47	62.2	14.01	34.3
15.8	30.50	41.2	42.84	50.8	53.66	11.1	62.90	61.2	14.99	33.3
25.7	30.81	40.3	43.18	50.0	54.00	10.2	63.34	60.4	15.99	32.8
Nov. 4.7	31.11	39.2	43.53	49.3	54.35	9.3	63.79	59.9	17.00	32.7
14.7	31.42	37.9	43.88	48.6	54.70	8.5	64.24	59.6	17.99	33.0
24.7	31.71	36.5	44.21	48.0	55.03	7.8	64.67	59.6	18.94	33.8
Dec. 4.6	31.98	35.0	44.53	47.5	55.35	7.2	65.08	60.0	19.82	35.1
14.6	32.23	33.6	44.82	47.2	55.65	6.8	65.45	60.6	20.61	36.0
24.6	32.44	32.2	45.07	47.1	55.91	6.6	65.77	61.5	21.29	39.0
34.5	32.61	30.9	45.28	47.1	56.12	6.5	66.04	62.7	21.83	41.4

FIXED STARS, 1908.

349

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ω^1 Cancri.		15 Argûs (ρ).		3 Ursæ Maj. (H.).		ζ^1 Cancri.		β Cancri.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 7 55	+25 38	h m 8 '3	-24 2	h m 8 3	+68 44	h m 8 6	+17 55	h m 8 11	+9 28
Jan. 0.6	22.15	39.2	38.13	15.9	41.37	38.1	56.40	30.3	31.79	9.1
10.5	22.34	39.2	38.28	18.7	41.75	40.4	56.58	29.8	31.97	8.0
20.5	22.47	39.3	38.38	21.4	42.02	43.0	56.72	29.4	32.10	7.1
30.5	22.55	39.7	38.42	24.0	42.16	45.6	56.80	29.2	32.18	6.4
Feb. 9.5	22.57	40.2	38.41	26.3	42.16	48.3	56.83	29.2	32.22	5.9
19.4	22.54	40.7	38.36	28.3	42.04	50.9	56.81	29.4	32.20	5.5
29.4	22.46	41.4	38.26	30.1	41.81	53.3	56.75	29.7	32.13	5.4
Mar. 10.4	22.34	42.1	38.12	31.5	41.48	55.5	56.64	30.1	32.03	5.4
20.3	22.19	42.7	37.95	32.5	41.07	57.2	56.51	30.5	31.90	5.5
30.3	22.02	43.3	37.77	33.1	40.61	58.6	56.35	31.0	31.75	5.8
Apr. 9.3	21.84	43.9	37.58	33.4	40.11	59.5	56.19	31.4	31.60	6.1
19.3	21.66	44.3	37.38	33.4	39.61	59.9	56.02	31.9	31.44	6.5
29.2	21.50	44.6	37.20	33.0	39.12	59.8	55.87	32.3	31.29	6.9
May 9.2	21.36	44.8	37.03	32.2	38.68	59.2	55.73	32.6	31.15	7.4
19.2	21.24	44.9	36.89	31.1	38.29	58.2	55.61	32.9	31.04	7.9
29.2	21.15	44.9	36.77	29.7	37.96	56.7	55.52	33.2	30.95	8.4
June 8.1	21.10	44.8	36.68	28.1	37.72	54.9	55.47	33.5	30.89	9.0
18.1	21.09	44.6	36.62	26.2	37.57	52.8	55.45	33.7	30.87	9.6
28.1	21.11	44.4	36.60	24.1	37.51	50.5	55.46	33.9	30.87	10.2
July 8.0	21.17	44.1	36.61	21.9	37.55	48.0	55.51	34.0	30.91	10.8
18.0	21.27	43.7	36.66	19.7	37.68	45.4	55.59	34.0	30.98	11.3
28.0	21.40	43.3	36.74	17.4	37.91	42.8	55.70	34.0	31.08	11.8
Aug. 7.0	21.57	42.8	36.86	15.2	38.22	40.1	55.85	34.0	31.21	12.2
16.9	21.76	42.3	37.00	13.2	38.61	37.5	56.02	33.8	31.37	12.5
26.9	21.98	41.7	37.18	11.4	39.08	35.0	56.22	33.5	31.55	12.7
Sept. 5.9	22.22	41.0	37.39	9.9	39.63	32.7	56.44	33.1	31.76	12.7
15.9	22.49	40.3	37.63	8.8	40.23	30.6	56.68	32.6	31.99	12.5
25.8	22.78	39.5	37.89	8.1	40.89	28.8	56.95	31.9	32.25	12.1
Oct. 5.8	23.09	38.6	38.17	7.9	41.60	27.2	57.24	31.1	32.53	11.5
15.8	23.42	37.7	38.47	8.1	42.34	26.0	57.55	30.2	32.82	10.6
25.7	23.76	36.7	38.78	8.9	43.11	25.2	57.87	29.2	33.12	9.6
Nov. 4.7	24.10	35.7	39.10	10.2	43.88	24.8	58.20	28.1	33.44	8.4
14.7	24.45	34.8	39.41	11.8	44.66	24.8	58.53	26.9	33.76	7.1
24.7	24.79	34.0	39.72	13.9	45.41	25.3	58.85	25.8	34.07	5.7
Dec. 4.6	25.11	33.3	40.01	16.3	46.11	26.2	59.16	24.7	34.37	4.3
14.6	25.40	32.8	40.27	18.9	46.76	27.5	59.45	23.7	34.65	2.9
24.6	25.66	32.4	40.50	21.7	47.32	29.3	59.71	22.8	34.90	1.6
34.6	25.88	32.3	40.68	24.5	47.78	31.4	59.93	22.1	35.11	0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	30 Monocerotis.		θ Chamæleontis.		η Cancr.		σ Hydræ.		γ Cancr.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 8 21	° ' " 3 36	h m 8 23	° ' " 77 11	h m 8 27	° ' " 20 45	h m 8 33	° ' " 3 39	h m 8 37	° ' " 21 47
Jan. 0.6	4.11	18	31.29	0.25	23.54	12.0	57.14	53.7	57.93	56.4
10.6	4.29	18	31.54	0.07	23.75	11.6	57.34	52.2	58.15	55.9
20.5	4.42	13	31.61	0.12	23.91	11.3	57.49	50.9	58.32	55.7
30.5	4.51	09	31.49	0.31	24.02	11.3	57.59	49.7	58.44	55.7
Feb. 9.5	4.54	03	31.18	0.47	24.07	11.4	57.64	48.8	58.51	55.9
19.4	4.52	06	30.71	0.62	24.07	11.7	57.64	48.1	58.52	56.2
29.4	4.46	10	30.09	0.76	24.02	12.2	57.59	47.7	58.48	56.7
Mar. 10.4	4.36	12	29.33	0.87	23.93	12.7	57.51	47.4	58.40	57.4
20.4	4.24	15	28.46	0.94	23.81	13.3	57.40	47.3	58.28	58.0
30.3	4.09	16	27.52	1.00	23.66	13.9	57.26	47.3	58.14	58.7
Apr. 9.3	3.93	16	26.52	1.03	23.50	14.5	57.11	47.5	57.98	59.3
19.3	3.77	15	25.49	1.04	23.33	15.0	56.96	47.8	57.82	59.9
29.3	3.62	14	24.45	1.02	23.17	15.5	56.81	48.3	57.66	60.4
May 9.2	3.48	12	23.43	0.98	23.03	15.9	56.67	48.8	57.51	60.8
19.2	3.36	10	22.45	0.91	22.91	16.2	56.55	49.4	57.38	61.2
29.2	3.26	07	21.54	0.82	22.81	16.4	56.45	50.1	57.28	61.4
June 8.2	3.19	04	20.72	0.72	22.74	16.6	56.38	50.9	57.20	61.5
18.1	3.15	01	20.00	0.60	22.70	16.7	56.34	51.7	57.16	61.6
28.1	3.14	02	19.40	0.46	22.70	16.7	56.32	52.5	57.14	61.5
July 8.1	3.16	03	18.94	0.31	22.73	16.6	56.34	53.3	57.16	61.4
18.0	3.21	09	18.63	0.15	22.79	16.5	56.39	54.1	57.21	61.2
28.0	3.30	11	18.48	0.02	22.88	16.3	56.46	54.9	57.30	60.9
Aug. 7.0	3.41	14	18.50	0.19	23.01	16.0	56.56	55.6	57.42	60.5
17.0	3.55	16	18.69	0.35	23.16	15.6	56.70	56.1	57.56	60.0
26.9	3.71	20	19.04	0.51	23.34	15.1	56.86	56.5	57.73	59.4
Sept. 5.9	3.91	22	19.55	0.65	23.55	14.4	57.04	56.7	57.93	58.7
15.9	4.13	24	20.20	0.78	23.79	13.7	57.25	56.7	58.16	57.8
25.8	4.37	26	20.98	0.88	24.05	12.8	57.49	56.5	58.42	56.8
Oct. 5.8	4.63	28	21.86	0.96	24.33	11.8	57.75	56.0	58.70	55.8
15.8	4.91	30	22.82	1.00	24.64	10.7	58.03	55.2	59.00	54.6
25.8	5.21	31	23.82	1.01	24.96	9.5	58.33	54.1	59.32	53.3
Nov. 4.7	5.52	31	24.83	0.99	25.29	8.3	58.64	52.9	59.65	52.0
14.7	5.83	31	25.82	0.98	25.63	7.1	58.96	51.4	59.99	50.7
24.7	6.14	29	26.74	0.82	25.97	5.9	59.27	49.8	60.34	49.5
Dec. 4.7	6.43	28	27.56	0.69	26.29	4.8	59.58	48.1	60.67	48.3
14.6	6.71	24	28.25	0.54	26.60	3.7	59.87	46.4	60.98	47.3
24.6	6.95	21	28.79	0.36	26.88	2.9	60.13	44.7	61.27	46.4
34.6	7.16	19	29.15	0.19	27.12	2.3	60.35	43.1	61.52	45.5

FIXED STARS, 1908.

351

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♌ Hydræ.		♋ Cancrī (mean).		♊ Ursæ Majoris.		♋ Ursæ Majoris.		♋ Cancrī.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 8 41	° + 6 45	h m 8 48	° + 30 55	h m 8 52	° + 48 23	h m 9 2	° + 67 30	h m 9 2	° + 11 2
Jan. 0.6	54.43	24.2	38.12	37.4	55.03	65.2	19.50	22.1	45.96	18.9
10.6	54.63	22.9	38.37	37.4	55.34	66.1	20.00	23.9	46.19	17.7
20.5	54.79	21.7	38.57	37.7	55.58	67.4	20.39	26.1	46.38	16.7
30.5	54.90	20.8	38.71	38.2	55.75	68.9	20.67	28.5	46.51	16.0
Feb. 9.5	54.96	20.0	38.79	38.9	55.85	70.6	20.82	31.1	46.59	15.5
19.5	54.97	19.5	38.81	39.8	55.88	72.5	20.85	33.8	46.63	15.2
29.4	54.93	19.1	38.78	40.8	55.84	74.4	20.77	36.4	46.61	15.0
Mar. 10.4	54.86	19.0	38.71	41.9	55.73	76.2	20.58	38.9	46.55	15.1
20.4	54.75	19.0	38.59	43.0	55.57	77.9	20.29	41.2	46.46	15.4
30.3	54.61	19.2	38.44	44.0	55.38	79.4	19.93	43.2	46.34	15.7
Apr. 9.3	54.47	19.5	38.27	44.9	55.15	80.6	19.52	44.7	46.20	16.1
19.3	54.32	19.8	38.10	45.6	54.91	81.6	19.08	45.8	46.06	16.6
29.3	54.17	20.3	37.92	46.2	54.67	82.2	18.62	46.4	45.91	17.1
May 9.2	54.03	20.8	37.76	46.6	54.45	82.4	18.18	46.6	45.77	17.6
19.2	53.91	21.4	37.62	46.8	54.24	82.4	17.76	46.2	45.65	18.2
29.2	53.81	22.0	37.50	46.9	54.06	82.0	17.39	45.4	45.54	18.7
June 8.2	53.73	22.6	37.41	46.7	53.92	81.2	17.07	44.1	45.45	19.2
18.1	53.68	23.3	37.35	46.4	53.82	80.2	16.82	42.4	45.39	19.7
28.1	53.67	24.0	37.32	45.9	53.76	78.9	16.64	40.4	45.36	20.2
July 8.1	53.68	24.6	37.33	45.3	53.75	77.4	16.54	38.1	45.36	20.6
18.0	53.72	25.2	37.38	44.6	53.79	75.7	16.53	35.6	45.39	20.9
28.0	53.79	25.8	37.46	43.7	53.87	73.9	16.60	32.9	45.44	21.2
Aug. 7.0	53.89	26.3	37.57	42.8	54.00	72.0	16.75	30.1	45.52	21.4
17.0	54.02	26.7	37.71	41.7	54.16	70.0	16.98	27.2	45.63	21.4
26.9	54.17	26.9	37.89	40.5	54.37	67.9	17.29	24.3	45.77	21.3
Sept. 5.9	54.35	26.9	38.10	39.3	54.63	65.8	17.67	21.5	45.94	21.1
15.9	54.56	26.7	38.33	38.0	54.92	63.8	18.13	18.8	46.13	20.6
25.9	54.79	26.3	38.60	36.6	55.25	61.8	18.65	16.3	46.35	20.0
Oct. 5.8	55.05	25.7	38.89	35.2	55.61	59.9	19.23	14.0	46.60	19.1
15.8	55.33	24.8	39.21	33.7	56.01	58.1	19.87	11.9	46.88	18.1
25.8	55.62	23.7	39.55	32.3	56.43	56.5	20.55	10.2	47.17	16.8
Nov. 4.7	55.93	22.4	39.91	31.0	56.87	55.2	21.27	8.8	47.48	15.4
14.7	56.25	20.9	40.28	29.7	57.33	54.1	22.00	7.9	47.81	13.9
24.7	56.57	19.3	40.65	28.5	57.79	53.3	22.74	7.5	48.13	12.3
Dec. 4.7	56.89	17.7	41.01	27.6	58.24	52.9	23.47	7.5	48.46	10.7
14.6	57.18	16.1	41.35	26.9	58.67	52.8	24.16	8.1	48.77	9.1
24.6	57.45	14.5	41.67	26.4	59.06	53.1	24.79	9.1	49.06	7.7
34.6	57.68	13.0	41.95	26.2	59.41	53.8	25.35	10.6	49.31	6.4

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	θ Hydræ.			β Argūs.			ι Argūs.			α Lyncis.			α Hydræ.		
	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion South.
	h m	s	°	h m	s	°	h m	s	°	h m	s	°	h m	s	°
	9 9	+	2 41	9 12	-	69 20	9 14	-	58 53	9 15	+	34 46	9 23	-	8 15
Jan. 0.6	34.78		71.3	14.74	2.8		39.27	6.5		27.19	49.8		4.09	29.9	
10.6	35.01	.23	69.6	15.08	6.4	3.6	39.55	10.0	3.5	27.48	49.9	.23	4.32	32.1	2.2
20.6	35.19	.18	68.1	15.30	10.1	3.7	39.74	13.7	3.7	27.71	50.2	.18	4.51	34.2	2.1
30.5	35.33	.14	66.8	15.40	13.9	3.8	39.86	17.5	3.8	27.88	50.9	.14	4.65	36.2	2.0
Feb. 9.5	35.41	.08	65.8	15.39	17.7	3.8	39.89	21.2	3.7	28.00	51.8	.08	4.74	37.9	1.7
		.03				3.7			3.6			1.1			1.5
19.5	35.44	.01	64.9	15.26	21.4	3.5	39.84	24.8	3.3	28.05	52.9	.01	4.78	39.4	1.3
29.5	35.43	.05	64.3	15.03	24.9	3.2	39.71	28.1	3.0	28.05	54.2	.05	4.77	40.7	1.0
Mar. 10.4	35.38	.09	63.9	14.71	28.1	2.9	39.51	31.1	2.7	27.99	55.5	.09	4.73	41.7	0.7
20.4	35.29	.11	63.7	14.30	31.0	2.5	39.25	33.8	2.3	27.89	56.8	.11	4.64	42.4	0.5
30.4	35.18	.13	63.7	13.82	33.5	2.0	38.95	36.1	1.8	27.76	58.0	.13	4.53	42.9	0.3
Apr. 9.3	35.05	.14	63.9	13.29	35.5	1.5	38.62	37.9	1.4	27.60	59.2	.14	4.40	43.2	0.0
19.3	34.91	.15	64.2	12.72	37.0	1.0	38.26	39.3	0.8	27.42	60.2	.15	4.26	43.2	0.2
29.3	34.76	.14	64.6	12.14	38.0	0.4	37.89	40.1	0.3	27.24	61.0	.14	4.12	43.0	0.4
May 9.3	34.62	.12	65.1	11.55	38.4	0.1	37.51	40.4	0.2	27.07	61.5	.12	3.98	42.6	0.6
19.2	34.50	.11	65.7	10.97	38.3	0.6	37.15	40.2	0.7	26.91	61.8	.11	3.84	42.0	0.7
29.2	34.39	.09	66.3	10.41	37.7	1.1	36.80	39.5	1.2	26.77	61.9	.09	3.73	41.3	0.9
June 8.2	34.30	.06	67.0	9.89	36.6	1.6	36.48	38.3	1.6	26.66	61.8	.06	3.63	40.4	1.1
18.2	34.24	.04	67.8	9.42	35.0	2.0	36.20	36.7	2.1	26.57	61.4	.04	3.55	39.3	1.1
28.1	34.20	.01	68.6	9.01	33.0	2.4	35.96	34.6	2.4	26.52	60.8	.01	3.50	38.2	1.2
July 8.1	34.19	.02	69.4	8.67	30.6	2.8	35.76	32.2	2.7	26.50	60.1	.02	3.46	37.0	1.3
18.1	34.21	.04	70.2	8.41	27.8	3.0	35.62	29.5	3.0	26.52	59.2	.04	3.46	35.7	1.3
28.0	34.25	.07	70.9	8.24	24.8	3.1	35.53	26.5	3.0	26.57	58.1	.07	3.48	34.4	1.2
Aug. 7.0	34.32	.09	71.5	8.16	21.7	3.2	35.51	23.5	3.1	26.65	56.8	.09	3.53	33.2	1.1
17.0	34.41	.13	72.0	8.18	18.5	3.1	35.56	20.4	2.9	26.77	55.4	.13	3.61	32.1	1.0
27.0	34.54	.15	72.4	8.31	15.4	3.0	35.67	17.5	2.8	26.92	54.0	.15	3.72	31.1	0.7
Sept. 5.9	34.69	.19	72.6	8.54	12.4	2.7	35.85	14.7	2.5	27.10	52.4	.19	3.85	30.4	0.5
15.9	34.88	.21	72.5	8.88	9.7	2.3	36.09	12.2	2.1	27.32	50.7	.21	4.02	29.9	0.2
25.9	35.09	.24	72.2	9.30	7.4	1.8	36.40	10.1	1.6	27.57	49.0	.24	4.22	29.7	0.1
Oct. 5.9	35.33	.26	71.6	9.81	5.6	1.2	36.77	8.5	1.1	27.86	47.3	.26	4.45	29.8	0.5
15.8	35.59	.29	70.8	10.39	4.4	0.6	37.18	7.4	0.4	28.17	45.5	.29	4.70	30.3	0.8
25.8	35.88	.30	69.7	11.02	3.8	0.0	37.64	7.0	0.2	28.51	43.8	.30	4.98	31.1	1.2
Nov. 4.8	36.18	.32	68.3	11.69	3.8	0.7	38.12	7.2	0.9	28.87	42.2	.32	5.28	32.3	1.5
14.7	36.50	.32	66.8	12.37	4.5	1.4	38.62	8.1	1.5	29.25	40.7	.32	5.59	33.8	1.8
24.7	36.82	.32	65.1	13.03	5.9	2.0	39.11	9.6	2.1	29.64	39.4	.32	5.91	35.6	2.0
Dec. 4.7	37.14	.31	63.2	13.66	7.9	2.5	39.58	11.7	2.6	30.02	38.3	.31	6.23	37.6	2.1
14.7	37.45	.28	61.4	14.24	10.4	3.0	40.01	14.3	3.1	30.39	37.5	.28	6.54	39.7	2.3
24.6	37.73	.25	59.5	14.74	13.4	3.4	40.40	17.4	3.4	30.74	37.0	.25	6.83	42.0	2.2
34.6	37.98		57.8	15.14	16.8		40.72	20.8		31.05	36.8		7.08	44.2	

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

353

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Draconis (H.).		δ Ursæ Majoris.		θ Ursæ Majoris.		ιo Leonis Minoris.		ο Leonis.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 9 23	° ' " 81 43	h m 9 26	° ' " +70 13	h m 9 26	° ' " +52 5	h m 9 28	° ' " +36 48	h m 9 36	° ' " +10 18
Jan. 0.6	65.46 s 1.26	51.9 " 2.1	22.69 s .60	56.9 " 1.6	42.71 s .37	41.3 " .9	35.40 s .30	17.3 " .1	14.41 s .26	40.5 " 1.4
10.6	66.72 1.02	54.0 2.5	23.29 .49	58.5 2.1	43.08 .30	42.2 1.2	35.70 .25	17.4 0.4	14.67 .21	39.1 1.1
20.6	67.74 0.74	56.5 2.3	23.78 .37	60.6 2.4	43.38 .23	43.4 1.6	35.95 .13	17.8 0.7	14.88 .17	38.0 0.9
30.5	68.48 0.44	59.3 3.0	24.15 .23	63.0 2.7	43.61 .16	45.0 1.8	36.15 .13	18.5 1.0	15.05 .11	37.1 0.7
Feb. 9.5	68.92 0.13	62.3 3.1	24.38 .10	65.7 2.8	43.77 0.08	46.8 2.0	36.28 0.07	19.5 1.2	15.16 0.07	36.4 0.4
19.5	69.05 0.18	65.4 3.1	24.48 0.04	68.5 2.8	43.85 0.00	48.8 2.1	36.35 0.01	20.7 1.4	15.23 0.02	36.0 0.2
29.5	68.87 0.47	68.5 2.9	24.44 0.16	71.3 2.7	43.85 0.08	50.9 2.1	36.36 0.04	22.1 1.4	15.25 0.03	35.8 0.0
Mar. 10.4	68.40 0.72	71.4 2.7	24.28 0.28	74.0 2.5	43.77 0.13	53.0 2.0	36.32 0.09	23.5 1.5	15.22 0.06	35.8 0.2
20.4	67.68 0.94	74.1 2.3	24.00 0.37	76.5 2.2	43.64 0.18	55.0 1.8	36.23 0.13	25.0 1.4	15.16 0.10	36.0 0.4
30.4	66.74 1.12	76.4 1.8	23.63 0.43	78.7 1.8	43.46 0.22	56.8 1.6	36.10 0.15	26.4 1.2	15.06 0.12	36.4 0.4
Apr. 9.4	65.62 1.23	78.2 1.3	23.20 0.49	80.5 1.4	43.24 0.25	58.4 1.3	35.95 0.17	27.6 1.1	14.94 0.13	36.8 0.5
19.3	64.39 1.30	79.5 0.8	22.71 0.51	81.9 0.9	42.99 0.25	59.7 0.9	35.78 0.18	28.7 0.9	14.81 0.14	37.3 0.5
29.3	63.09 1.32	80.3 0.4	22.20 0.52	82.8 0.4	42.74 0.26	60.6 0.6	35.60 0.17	29.6 0.7	14.67 0.13	37.8 0.6
May 9.3	61.77 1.28	80.5 0.2	21.68 0.49	83.2 0.2	42.48 0.24	61.2 0.1	35.42 0.18	30.3 0.4	14.54 0.13	38.4 0.6
19.2	60.49 1.20	80.1 0.9	21.19 0.46	83.0 0.6	42.24 0.22	61.3 0.2	35.25 0.15	30.7 0.1	14.41 0.11	39.0 0.6
29.2	59.29 1.07	79.2 1.5	20.73 0.41	82.4 1.1	42.02 0.18	61.1 0.6	35.10 0.12	30.8 0.1	14.30 0.10	39.6 0.5
June 8.2	58.22 0.93	77.7 1.9	20.32 0.34	81.3 1.5	41.84 0.15	60.5 0.9	34.98 0.10	30.7 0.4	14.20 0.08	40.1 0.5
18.2	57.29 0.74	75.8 2.3	19.98 0.26	79.8 1.9	41.69 0.11	59.6 1.3	34.88 0.06	30.3 0.6	14.12 0.05	40.6 0.5
28.1	56.55 0.54	73.5 2.6	19.72 0.19	77.9 2.3	41.58 0.07	58.3 1.6	34.82 0.04	29.7 0.8	14.07 0.03	41.1 0.4
July 8.1	56.01 0.33	70.9 3.0	19.53 0.09	75.6 2.6	41.51 0.02	56.7 1.8	34.78 0.00	28.9 1.0	14.04 0.00	41.5 0.4
18.1	55.68 0.11	67.9 3.1	19.44 0.00	73.0 2.8	41.49 0.03	54.9 2.0	34.78 0.04	27.9 1.2	14.04 0.02	41.9 0.3
28.1	55.57 0.12	64.8 3.3	19.44 0.09	70.2 2.9	41.52 0.08	52.9 2.2	34.82 0.07	26.7 1.4	14.06 0.05	42.2 0.1
Aug. 7.0	55.69 0.35	61.5 3.4	19.53 0.18	67.3 3.0	41.60 0.12	50.7 2.3	34.89 0.10	25.3 1.6	14.11 0.08	42.3 0.0
17.0	56.04 0.57	58.1 3.4	19.71 0.27	64.3 3.1	41.72 0.17	48.4 2.4	34.99 0.14	23.7 1.6	14.19 0.10	42.3 0.1
27.0	56.61 0.78	54.7 3.3	19.98 0.35	61.2 3.1	41.89 0.22	46.0 2.4	35.13 0.17	22.1 1.7	14.29 0.14	42.2 0.3
Sept. 5.9	57.39 0.99	51.4 3.2	20.33 0.45	58.1 3.0	42.11 0.26	43.6 2.5	35.30 0.21	20.4 1.8	14.43 0.16	41.9 0.5
15.9	58.38 1.17	48.2 2.9	20.78 0.52	55.1 2.8	42.37 0.30	41.1 2.4	35.51 0.25	18.6 1.9	14.59 0.19	41.4 0.8
25.9	59.55 1.35	45.3 2.7	21.30 0.60	52.3 2.6	42.67 0.35	38.7 2.3	35.76 0.28	16.7 1.9	14.78 0.23	40.6 0.9
Oct. 5.9	60.90 1.51	42.6 2.4	21.90 0.67	49.7 2.4	43.02 0.39	36.4 2.3	36.04 0.31	14.8 1.9	15.01 0.25	39.7 1.2
15.8	62.41 1.63	40.2 2.0	22.57 0.73	47.3 2.0	43.41 0.43	34.1 2.0	36.35 0.34	12.9 1.9	15.26 0.28	38.5 1.3
25.8	64.04 1.73	38.2 1.5	23.30 0.77	45.3 1.7	43.84 0.45	32.1 1.7	36.69 0.36	11.0 1.8	15.54 0.30	37.2 1.5
Nov. 4.8	65.77 1.79	36.7 1.0	24.07 0.81	43.6 1.3	44.29 0.48	30.4 1.5	37.05 0.38	9.2 1.6	15.84 0.32	35.7 1.7
14.8	67.56 1.80	35.7 0.7	24.88 0.82	42.3 0.7	44.77 0.49	28.9 1.2	37.43 0.40	7.6 1.4	16.16 0.33	34.0 1.7
24.7	69.36 1.79	35.3 0.4	25.70 0.82	41.6 0.2	45.26 0.49	27.7 0.7	37.83 0.40	6.2 1.1	16.49 0.33	32.3 1.8
Dec. 4.7	71.15 1.71	35.4 0.7	26.52 0.79	41.4 0.3	45.75 0.47	27.0 0.3	38.23 0.38	5.1 0.9	16.82 0.32	30.5 1.7
14.7	72.86 1.58	36.1 1.2	27.31 0.71	41.7 0.8	46.22 0.45	26.7 0.1	38.61 0.36	4.2 0.5	17.14 0.31	28.8 1.7
24.6	74.44 1.41	37.3 1.8	28.05 0.66	42.5 1.3	46.67 0.40	26.8 0.5	38.97 0.33	3.7 0.2	17.45 0.28	27.1 1.5
34.6	75.85	39.1	28.71	43.8	47.07	27.3	39.30	3.5	17.73	25.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Chamæleonis.		ε Leonis.		μ Leonis.		19 Leonis Minoris.		π Leonis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 9 36	° 31	h m 9 40	° 24 11	h m 9 47	° 26 26	h m 9 52	° 41 29	h m 9 55	° 8 28
Jan. 0.6	44.37	23.0	37.73	49.9	31.81	22.2	3.06	31.8	20.99	69.9
10.6	45.09 ^{0.72}	26.3 ^{3.3}	38.01 ^{.28}	49.2 ^{0.7}	32.10 ^{.29}	21.6 ^{0.6}	3.40 ^{.34}	31.9 ^{0.1}	21.25 ^{.26}	68.4 ^{1.5}
20.6	45.59 ^{0.50}	29.9 ^{3.6}	38.25 ^{.24}	48.8 ^{0.4}	32.34 ^{.24}	21.3 ^{0.3}	3.69 ^{.29}	32.4 ^{0.5}	21.48 ^{.23}	67.1 ^{1.3}
30.6	45.86 ^{0.27}	33.6 ^{3.7}	38.43 ^{.18}	48.7 ^{0.1}	32.54 ^{.20}	21.3 ^{0.0}	3.92 ^{.23}	33.3 ^{0.9}	21.66 ^{.18}	66.0 ^{1.1}
Feb. 9.5	45.89 ^{0.03}	37.4 ^{3.8}	38.56 ^{.13}	48.9 ^{0.2}	32.68 ^{.14}	21.6 ^{0.3}	4.09 ^{.17}	34.5 ^{1.2}	21.80 ^{.14}	65.2 ^{0.8}
	45.89 ^{0.20}	37.4 ^{3.9}	38.56 ^{.08}	48.9 ^{0.5}	32.68 ^{.09}	21.6 ^{0.6}	4.09 ^{.11}	34.5 ^{1.4}	21.80 ^{.08}	65.2 ^{0.6}
19.5	45.69	41.3	38.64	49.4	32.77	22.2	4.20	35.9	21.88	64.6
29.5	45.26 ^{0.43}	45.0 ^{3.7}	38.67 ^{.03}	50.0 ^{0.6}	32.80 ^{.03}	23.0 ^{0.8}	4.24 ^{.04}	37.5 ^{1.6}	21.92 ^{.04}	64.3 ^{0.3}
Mar. 10.4	44.63 ^{0.63}	48.5 ^{3.5}	38.65 ^{.02}	50.8 ^{0.8}	32.78 ^{.02}	23.0 ^{0.9}	4.22 ^{.02}	39.2 ^{1.7}	21.91 ^{.01}	64.2 ^{0.1}
20.4	43.81 ^{0.82}	51.7 ^{3.2}	38.58 ^{.07}	51.7 ^{0.9}	32.72 ^{.06}	23.9 ^{1.0}	4.15 ^{.07}	41.0 ^{1.8}	21.86 ^{.05}	64.3 ^{0.1}
30.4	42.84 ^{0.97}	54.5 ^{2.8}	38.48 ^{.10}	52.7 ^{1.0}	32.63 ^{.09}	26.0 ^{1.1}	4.03 ^{.12}	42.7 ^{1.7}	21.78 ^{.08}	64.6 ^{0.3}
	42.84 ^{1.11}	54.5 ^{2.5}	38.48 ^{.12}	52.7 ^{0.9}	32.63 ^{.13}	26.0 ^{1.1}	4.03 ^{.15}	42.7 ^{1.5}	21.78 ^{.10}	64.6 ^{0.4}
Apr. 9.4	41.73	57.0	38.36	53.6	32.50	27.1	3.88	44.2	21.68	65.0
19.3	40.53 ^{1.20}	59.1 ^{2.1}	38.22 ^{.14}	54.5 ^{0.9}	32.36 ^{.14}	28.1 ^{1.0}	3.71 ^{.17}	45.6 ^{1.4}	21.56 ^{.12}	65.4 ^{0.4}
29.3	39.25 ^{1.28}	60.7 ^{1.6}	38.07 ^{.15}	55.3 ^{0.8}	32.21 ^{.15}	28.9 ^{0.8}	3.52 ^{.19}	46.7 ^{1.1}	21.43 ^{.13}	66.0 ^{0.6}
May 9.3	37.93 ^{1.32}	61.7 ^{1.0}	37.92 ^{.15}	55.3 ^{0.7}	32.06 ^{.15}	29.7 ^{0.8}	3.33 ^{.29}	47.5 ^{0.8}	21.30 ^{.13}	66.6 ^{0.6}
19.3	36.60 ^{1.33}	62.2 ^{0.5}	37.78 ^{.14}	56.0 ^{0.6}	31.92 ^{.14}	30.3 ^{0.6}	3.14 ^{.19}	48.0 ^{0.5}	21.17 ^{.13}	67.2 ^{0.6}
	36.60 ^{1.32}	62.2 ^{0.0}	37.78 ^{.12}	56.6 ^{0.4}	31.92 ^{.13}	30.3 ^{0.4}	3.14 ^{.17}	48.0 ^{0.2}	21.17 ^{.11}	67.2 ^{0.6}
29.2	35.28	62.2	37.66	57.0	31.79	30.7	2.97	48.2	21.06	67.8
June 8.2	34.01 ^{1.27}	61.6 ^{0.6}	37.55 ^{.11}	57.3 ^{0.3}	31.68 ^{.11}	30.9 ^{0.2}	2.82 ^{.15}	48.1 ^{0.1}	20.96 ^{.10}	68.4 ^{0.6}
18.2	32.82 ^{1.19}	60.5 ^{1.1}	37.46 ^{.09}	57.4 ^{0.1}	31.59 ^{.09}	31.0 ^{0.1}	2.70 ^{.12}	47.7 ^{0.4}	20.87 ^{.09}	68.9 ^{0.5}
28.1	31.74 ^{1.08}	58.9 ^{1.6}	37.40 ^{.06}	57.4 ^{0.1}	31.52 ^{.07}	30.8 ^{0.2}	2.60 ^{.10}	47.0 ^{0.7}	20.81 ^{.06}	69.4 ^{0.5}
July 8.1	30.79 ^{0.95}	56.8 ^{2.1}	37.37 ^{.03}	57.1 ^{0.2}	31.48 ^{.04}	30.5 ^{0.3}	2.54 ^{.06}	46.1 ^{0.9}	20.77 ^{.04}	69.9 ^{0.5}
	30.79 ^{0.79}	56.8 ^{2.4}	37.37 ^{.01}	57.1 ^{0.3}	31.48 ^{.01}	30.5 ^{0.5}	2.54 ^{.03}	46.1 ^{1.2}	20.77 ^{.02}	69.9 ^{0.4}
18.1	30.00	54.4	37.36	56.8	31.47	30.0	2.51	44.9	20.75	70.3
28.1	29.40 ^{0.60}	51.6 ^{2.8}	37.39 ^{.03}	56.3 ^{0.5}	31.48 ^{.01}	29.4 ^{0.6}	2.51 ^{.00}	43.5 ^{1.4}	20.75 ^{.00}	70.7 ^{0.4}
Aug. 7.0	29.00 ^{0.40}	48.6 ^{3.0}	37.44 ^{.05}	55.6 ^{0.7}	31.52 ^{.04}	28.6 ^{0.8}	2.55 ^{.04}	41.8 ^{1.7}	20.78 ^{.03}	70.9 ^{0.2}
17.0	28.83 ^{0.17}	45.5 ^{3.1}	37.52 ^{.08}	54.8 ^{0.8}	31.60 ^{.08}	27.6 ^{1.0}	2.63 ^{.08}	40.0 ^{1.8}	20.84 ^{.06}	71.0 ^{0.1}
27.0	28.88 ^{0.05}	42.3 ^{3.2}	37.63 ^{.11}	53.8 ^{1.0}	31.70 ^{.10}	26.5 ^{1.1}	2.74 ^{.11}	38.1 ^{1.9}	20.93 ^{.09}	70.9 ^{0.1}
	28.88 ^{0.29}	42.3 ^{3.1}	37.63 ^{.14}	53.8 ^{1.1}	31.70 ^{.14}	26.5 ^{1.2}	2.74 ^{.16}	38.1 ^{2.1}	20.93 ^{.11}	70.9 ^{0.2}
Sept. 6.0	29.17	39.2	37.77	52.7	31.84	25.3	2.90	36.0	21.04	70.7
15.9	29.68 ^{0.51}	36.3 ^{2.9}	37.94 ^{.17}	51.4 ^{1.3}	32.01 ^{.17}	23.9 ^{1.4}	3.09 ^{.19}	33.8 ^{2.2}	21.18 ^{.14}	70.2 ^{0.5}
25.9	30.41 ^{0.73}	33.7 ^{2.6}	38.15 ^{.21}	50.0 ^{1.4}	32.21 ^{.20}	22.3 ^{1.6}	3.32 ^{.23}	31.6 ^{2.2}	21.36 ^{.18}	69.5 ^{0.7}
Oct. 5.9	31.34 ^{0.93}	31.5 ^{2.2}	38.38 ^{.23}	48.5 ^{1.5}	32.44 ^{.23}	20.6 ^{1.7}	3.59 ^{.27}	29.3 ^{2.3}	21.57 ^{.21}	68.6 ^{0.9}
15.8	32.44 ^{1.10}	29.8 ^{1.7}	38.65 ^{.27}	46.8 ^{1.7}	32.71 ^{.27}	18.9 ^{1.7}	3.89 ^{.30}	27.1 ^{2.2}	21.80 ^{.23}	67.5 ^{1.1}
	32.44 ^{1.22}	29.8 ^{1.1}	38.65 ^{.30}	46.8 ^{1.7}	32.71 ^{.30}	18.9 ^{1.8}	3.89 ^{.35}	27.1 ^{2.1}	21.80 ^{.27}	67.5 ^{1.4}
25.8	33.66	28.7	38.95	45.1	33.01	17.1	4.24	25.0	22.07	66.1
Nov. 4.8	34.98 ^{1.32}	28.2 ^{0.5}	39.27 ^{.32}	43.4 ^{1.7}	33.33 ^{.32}	15.3 ^{1.8}	4.61 ^{.37}	23.0 ^{2.0}	22.37 ^{.30}	64.6 ^{1.5}
14.8	36.34 ^{1.36}	28.4 ^{0.2}	39.61 ^{.34}	41.6 ^{1.8}	33.67 ^{.34}	13.5 ^{1.8}	5.00 ^{.39}	21.1 ^{1.9}	22.68 ^{.31}	62.9 ^{1.7}
24.7	37.68 ^{1.14}	20.2 ^{0.8}	39.97 ^{.36}	40.0 ^{1.6}	34.03 ^{.36}	11.8 ^{1.7}	5.42 ^{.42}	19.5 ^{1.6}	23.01 ^{.33}	61.0 ^{1.9}
Dec. 4.7	38.97 ^{1.29}	30.7 ^{1.5}	40.32 ^{.35}	38.4 ^{1.6}	34.39 ^{.36}	10.2 ^{1.6}	5.84 ^{.42}	18.2 ^{1.3}	23.34 ^{.33}	59.2 ^{1.8}
	38.97 ^{1.19}	30.7 ^{2.1}	40.32 ^{.35}	38.4 ^{1.3}	34.39 ^{.36}	10.2 ^{1.3}	5.84 ^{.41}	18.2 ^{0.9}	23.34 ^{.33}	59.2 ^{1.9}
14.7	40.16	32.8	40.67	37.1	34.75	8.9	6.25	17.3	23.67	57.3
24.7	41.19 ^{1.01}	35.4 ^{2.0}	41.01 ^{.34}	35.9 ^{1.2}	35.09 ^{.34}	7.8 ^{1.1}	6.65 ^{.40}	16.7 ^{0.6}	23.98 ^{.31}	55.5 ^{1.8}
34.6	42.05 ^{0.86}	38.5 ^{3.1}	41.31 ^{.30}	35.0 ^{0.9}	35.40 ^{.31}	6.9 ^{0.9}	7.01 ^{.36}	16.5 ^{0.2}	24.27 ^{.29}	53.9 ^{1.6}

FIXED STARS, 1908.

355

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Leonis. (Regulus.)		32 Ursæ Majoris.		λ Ursæ Majoris.		γ^1 Leonis.		μ Hydræ.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m	° '	h m	° '	h m	° '	h m	° '	h m	° '
	10 3	+12 24	10 11	+65 33	10 11	+43 22	10 14	+20 18	10 21	-16 21
	s	"	s	"	s	"	s	"	s	"
Jan. 0.7	28.20	61.3	22.00	52.6	32.96	19.2	53.83	23.5	38.31	50.5
	.28	1.4	.57	1.0	.36	0.0	.29	1.1	.27	2.5
10.6	28.48	59.9	22.57	53.6	33.32	19.2	54.12	22.4	38.58	53.0
	.24	1.1	.49	1.4	.31	0.5	.26	0.7	.24	2.5
20.6	28.72	58.8	23.06	55.0	33.63	19.7	54.38	21.7	38.82	55.5
	.19	0.9	.41	1.9	.26	0.8	.21	0.5	.20	2.4
30.6	28.91	57.9	23.47	56.9	33.89	20.5	54.59	21.2	39.02	57.9
	.14	0.6	.30	2.3	.20	1.2	.17	0.2	.14	2.3
Feb. 9.5	29.05	57.3	23.77	59.2	34.09	21.7	54.76	21.0	39.16	60.2
	.10	0.3	.20	2.5	.13	1.5	.11	0.1	.10	2.1
19.5	29.15	57.0	23.97	61.7	34.22	23.2	54.87	21.1	39.26	62.3
	.04	0.1	.08	2.7	.07	1.7	.06	0.4	.05	1.9
29.5	29.19	56.9	24.05	64.4	34.29	24.9	54.93	21.5	39.31	64.2
	.00	0.1	.03	2.7	.01	1.8	.02	0.6	.01	1.6
Mar. 10.5	29.19	57.0	24.02	67.1	34.30	26.7	54.95	22.1	39.32	65.8
	.04	0.3	.12	2.6	.05	1.9	.03	0.7	.03	1.3
20.4	29.15	57.3	23.90	69.7	34.25	28.6	54.92	22.8	39.29	67.1
	.04	0.5	.11	2.5	.10	1.9	.07	0.9	.07	1.1
30.4	29.08	57.8	23.69	72.2	34.15	30.5	54.85	23.7	39.22	68.2
	.10	0.5	.28	2.2	.14	1.7	.09	0.9	.09	0.8
Apr. 9.4	28.98	58.3	23.41	74.4	34.01	32.2	54.76	24.6	39.13	69.0
	.12	0.6	.34	1.8	.17	1.5	.12	0.9	.12	0.5
19.4	28.86	58.9	23.07	76.2	33.84	33.7	54.64	25.5	39.01	69.5
	.13	0.7	.38	1.4	.19	1.3	.13	0.9	.12	0.2
29.3	28.73	59.6	22.69	77.6	33.65	35.0	54.51	26.4	38.89	69.7
	.13	0.6	.39	1.0	.19	1.0	.13	0.8	.14	0.0
May 9.3	28.60	60.2	22.30	78.6	33.46	36.0	54.38	27.2	38.75	69.7
	.12	0.7	.40	0.5	.19	0.7	.13	0.7	.13	0.2
19.3	28.48	60.9	21.90	79.1	33.27	36.7	54.25	27.9	38.62	69.5
	.12	0.6	.38	0.0	.18	0.3	.12	0.6	.13	0.5
29.2	28.36	61.5	21.52	79.1	33.09	37.0	54.13	28.5	38.49	69.0
	.10	0.5	.36	0.5	.16	0.0	.11	0.4	.12	0.8
June 8.2	28.26	62.0	21.16	78.6	32.93	37.0	54.02	28.9	38.37	68.2
	.09	0.5	.31	1.0	.15	0.3	.10	0.3	.11	0.9
18.2	28.17	62.5	20.85	77.6	32.78	36.7	53.92	29.2	38.26	67.3
	.07	0.4	.27	1.4	.11	0.6	.08	0.2	.09	1.1
28.2	28.10	62.9	20.58	76.2	32.67	36.1	53.84	29.4	38.17	66.2
	.05	0.3	.22	1.8	.09	1.0	.06	0.0	.08	1.2
July 8.1	28.05	63.2	20.36	74.4	32.58	35.1	53.78	29.4	38.09	65.0
	.02	0.3	.16	2.2	.06	1.2	.03	0.1	.05	1.3
18.1	28.03	63.5	20.20	72.2	32.52	33.9	53.75	29.3	38.04	63.7
	.00	0.1	.09	2.5	.02	1.5	.01	0.3	.04	1.5
28.1	28.03	63.6	20.11	69.7	32.50	32.4	53.74	29.0	38.00	62.2
	.02	0.0	.02	2.7	.02	1.7	.02	0.5	.01	1.4
Aug. 7.1	28.05	63.6	20.09	67.0	32.52	30.7	53.76	28.5	37.99	60.8
	.05	0.2	.05	2.9	.05	1.9	.04	0.6	.02	1.4
17.0	28.10	63.4	20.14	64.1	32.57	28.8	53.80	27.9	38.01	59.4
	.08	0.3	.12	3.0	.09	2.1	.07	0.9	.04	1.3
27.0	28.18	63.1	20.26	61.1	32.66	26.7	53.87	27.0	38.05	58.1
	.11	0.5	.19	3.2	.12	2.3	.10	1.0	.08	1.1
Sept. 6.0	28.29	62.6	20.45	57.9	32.78	24.4	53.97	26.0	38.13	57.0
	.14	0.7	.26	3.2	.17	2.3	.14	1.1	.11	0.9
15.9	28.43	61.9	20.71	54.7	32.95	22.1	54.11	24.9	38.24	56.1
	.17	1.0	.34	3.1	.21	2.4	.17	1.4	.15	0.7
25.9	28.60	60.9	21.05	51.6	33.16	19.7	54.28	23.5	38.39	55.4
	.20	1.1	.41	3.0	.26	2.5	.20	1.5	.18	0.3
Oct. 5.9	28.80	59.8	21.46	48.6	33.42	17.2	54.48	22.0	38.57	55.1
	.23	1.3	.47	2.9	.29	2.4	.23	1.7	.22	0.1
15.9	29.03	58.5	21.93	45.7	33.71	14.8	54.71	20.3	38.79	55.2
	.27	1.5	.54	2.6	.33	2.3	.27	1.8	.26	0.4
25.8	29.30	57.0	22.47	43.1	34.04	12.5	54.98	18.5	39.05	55.6
	.29	1.6	.59	2.3	.37	2.3	.30	1.9	.28	0.9
Nov. 4.8	29.59	55.4	23.06	40.8	34.41	10.2	55.28	16.6	39.33	56.5
	.32	1.8	.64	1.9	.39	2.0	.32	1.9	.31	1.2
14.8	29.91	53.6	23.70	38.9	34.80	8.2	55.60	14.7	39.64	57.7
	.33	1.8	.67	1.5	.42	1.8	.34	1.9	.32	1.6
24.8	30.24	51.8	24.37	37.4	35.22	6.4	55.94	12.8	39.96	59.3
	.34	1.9	.68	1.0	.43	1.5	.35	1.9	.33	2.0
Dec. 4.7	30.58	49.9	25.05	36.4	35.65	4.9	56.29	10.9	40.29	61.3
	.33	1.8	.68	0.5	.43	1.1	.35	1.7	.34	2.2
14.7	30.91	48.1	25.73	35.9	36.08	3.8	56.64	9.2	40.63	63.5
	.32	1.7	.65	0.1	.41	0.7	.34	1.5	.32	2.4
24.7	31.23	46.4	26.38	36.0	36.49	3.1	56.98	7.7	40.95	65.9
	.30	1.5	.62	0.6	.39	0.3	.32	1.3	.29	2.5
34.6	31.53	44.9	27.00	36.6	36.88	2.8	57.30	6.4	41.24	68.4

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Leonis Minoris.			α Antlæ.			γ Draconis (H.).			ρ Leonis.			δ Leonis Minoris.		
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.	
	h m 10 22	° +37 10		h m 10 22	° -30 35		h m 10 27	° +76 10		h m 10 27	° + 9 46		h m 10 38	° +23 39	
	s	"		s	"		s	"		s	"		s	"	
Jan. 0.7	33.72	37.3	56.50	45.4	18.66	61.9	57.76	49.8	24.54	69.8					
10.6	34.07	36.9	56.78	48.3	19.61	63.1	58.05	48.2	24.86	68.7					
20.6	34.37	37.0	57.03	51.2	20.44	64.7	58.31	46.8	25.14	68.0					
30.6	34.62	37.4	57.23	54.2	21.14	66.9	58.52	45.7	25.38	67.6					
Feb. 9.6	34.82	38.2	57.38	57.2	21.67	69.4	58.69	44.9	25.57	67.5					
19.5	34.96	39.3	57.47	59.9	22.02	72.2	58.80	44.3	25.71	67.8					
29.5	35.03	40.7	57.51	62.5	22.18	75.2	58.87	44.0	25.80	68.3					
Mar. 10.5	35.05	42.2	57.51	64.9	22.16	78.2	58.90	44.0	25.84	69.1					
20.4	35.02	43.8	57.46	67.0	21.97	81.2	58.88	44.1	25.83	70.1					
30.4	34.95	45.4	57.38	68.8	21.62	83.9	58.83	44.5	25.78	71.2					
Apr. 9.4	34.83	47.0	57.27	70.2	21.13	86.3	58.75	44.9	25.70	72.3					
19.4	34.69	48.5	57.14	71.3	20.54	88.4	58.65	45.5	25.60	73.4					
29.3	34.54	49.8	56.99	72.1	19.87	89.9	58.54	46.1	25.48	74.4					
May 9.3	34.37	50.8	56.83	72.5	19.14	91.0	58.42	46.8	25.35	75.4					
19.3	34.21	51.6	56.67	72.5	18.40	91.5	58.30	47.4	25.22	76.2					
29.3	34.05	52.1	56.51	72.2	17.66	91.5	58.18	48.1	25.09	76.9					
June 8.2	33.90	52.3	56.36	71.5	16.96	90.9	58.07	48.7	24.97	77.4					
18.2	33.77	52.2	56.22	70.6	16.30	89.9	57.98	49.2	24.86	77.8					
28.2	33.67	51.9	56.10	69.3	15.72	88.3	57.90	49.7	24.77	77.9					
July 8.1	33.58	51.2	55.99	67.8	15.23	86.3	57.84	50.1	24.69	77.8					
18.1	33.53	50.3	55.91	66.0	14.84	83.9	57.80	50.5	24.64	77.6					
28.1	33.50	49.2	55.85	64.1	14.57	81.1	57.78	50.7	24.61	77.1					
Aug. 7.1	33.51	47.8	55.82	62.1	14.41	78.0	57.78	50.8	24.60	76.5					
17.0	33.54	46.2	55.82	60.1	14.37	74.8	57.80	50.8	24.62	75.6					
27.0	33.61	44.4	55.85	58.1	14.46	71.4	57.86	50.6	24.67	74.6					
Sept. 6.0	33.72	42.5	55.92	56.2	14.68	67.9	57.94	50.2	24.74	73.4					
16.0	33.86	40.4	56.03	54.6	15.03	64.4	58.05	49.6	24.85	71.9					
25.9	34.04	38.1	56.19	53.2	15.51	61.0	58.20	48.8	25.00	70.3					
Oct. 5.9	34.26	35.8	56.38	52.2	16.11	57.7	58.38	47.7	25.18	68.6					
15.9	34.52	33.5	56.61	51.6	16.83	54.6	58.59	46.5	25.40	66.7					
25.8	34.82	31.2	56.88	51.5	17.66	51.8	58.84	45.0	25.65	64.6					
Nov. 4.8	35.16	28.9	57.19	51.9	18.59	49.3	59.12	43.3	25.94	62.5					
14.8	35.52	26.8	57.52	52.8	19.60	47.3	59.42	41.5	26.26	60.4					
24.8	35.91	24.9	57.87	54.1	20.67	45.7	59.74	39.6	26.60	58.4					
Dec. 4.7	36.30	23.2	58.22	55.9	21.77	44.7	60.08	37.6	26.95	56.4					
14.7	36.70	21.8	58.57	58.1	22.87	44.3	60.42	35.6	27.31	54.6					
24.7	37.09	20.8	58.91	60.6	23.95	44.4	60.74	33.8	27.66	53.1					
34.7	37.46	20.1	59.22	63.4	24.96	45.2	61.05	32.0	28.00	51.8					

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Argvis.		ζ Leonis.		δ ² Chamæleontis.		46 Leonis Minoris.		Groombridge 1706.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 10 41	° ' " -59 11	h m 10 44	° ' " +11 1	h m 10 44	° ' " 80 2	h m 10 48	° ' " +34 42	h m 10 52	° ' " +78 15
Jan. 0.7	30.15	42.6	24.95	56.2	60.08	54.9	9.72	33.8	37.62	34.8
10.6	30.56	45.6	25.25	54.6	61.09	57.6	10.07	33.1	38.77	35.7
20.6	30.92	48.9	25.52	53.2	61.94	60.7	10.39	32.8	39.80	37.1
30.6	31.20	52.4	25.75	52.1	62.60	64.2	10.66	33.0	40.69	39.1
Feb. 9.6	31.41	56.1	25.93	51.3	63.05	67.9	10.88	33.5	41.39	41.5
19.5	31.54	59.8	26.06	50.8	63.29	71.8	11.04	34.4	41.90	44.3
29.5	31.59	63.4	26.15	50.6	63.32	75.7	11.15	35.5	42.20	47.2
Mar. 10.5	31.57	66.9	26.19	50.6	63.15	79.5	11.20	36.9	42.28	50.3
20.5	31.48	70.2	26.19	50.8	62.78	83.2	11.20	38.5	42.16	53.3
30.4	31.33	73.3	26.15	51.2	62.23	86.7	11.15	40.1	41.84	56.2
Apr. 9.4	31.12	75.9	26.09	51.8	61.52	89.9	11.07	41.7	41.35	58.8
19.4	30.87	78.2	26.00	52.4	60.67	92.7	10.96	43.2	40.72	61.1
29.3	30.59	80.1	25.89	53.1	59.71	95.2	10.82	44.6	39.98	62.9
May 9.3	30.29	81.5	25.78	53.8	58.65	97.2	10.67	45.8	39.15	64.3
19.3	29.97	82.4	25.67	54.5	57.52	98.7	10.52	46.7	38.28	65.1
29.3	29.63	82.9	25.55	55.2	56.35	99.6	10.37	47.4	37.39	65.4
June 8.2	29.30	82.8	25.44	55.8	55.16	100.0	10.23	47.9	36.52	65.1
18.2	28.98	82.2	25.34	56.4	53.98	99.9	10.10	48.0	35.69	64.2
28.2	28.68	81.2	25.26	56.8	52.85	99.2	9.98	47.9	34.93	62.8
July 8.2	28.40	79.7	25.19	57.2	51.78	97.9	9.89	47.4	34.26	61.0
18.1	28.15	77.8	25.13	57.5	50.82	96.2	9.81	46.7	33.69	58.8
28.1	27.94	75.5	25.10	57.7	49.98	94.1	9.76	45.8	33.24	56.1
Aug. 7.1	27.78	72.9	25.09	57.7	49.30	91.6	9.74	44.6	32.91	53.1
17.0	27.68	70.2	25.10	57.6	48.80	88.7	9.75	43.1	32.73	49.9
27.0	27.64	67.3	25.13	57.3	48.51	85.7	9.78	41.4	32.69	46.4
Sept. 6.0	27.67	64.5	25.20	56.8	48.43	82.6	9.85	39.5	32.81	42.8
16.0	27.76	61.7	25.30	56.1	48.57	79.5	9.96	37.5	33.07	39.2
25.9	27.94	59.2	25.43	55.1	48.95	76.6	10.11	35.3	33.49	35.6
Oct. 5.9	28.18	56.9	25.59	54.0	49.54	73.9	10.30	33.0	34.06	32.1
15.9	28.50	55.1	25.79	52.6	50.34	71.5	10.53	30.6	34.78	28.7
25.9	28.89	53.8	26.03	51.0	51.33	69.6	10.80	28.1	35.64	25.6
Nov. 4.8	29.32	53.1	26.30	49.3	52.46	68.3	11.10	25.7	36.63	22.9
14.8	29.80	53.0	26.60	47.4	53.70	67.6	11.44	23.4	37.73	20.5
24.8	30.31	53.5	26.92	45.4	55.01	67.6	11.80	21.2	38.91	18.6
Dec. 4.7	30.83	54.6	27.25	43.4	56.33	68.2	12.19	19.3	40.15	17.3
14.7	31.35	56.3	27.59	41.4	57.63	69.4	12.58	17.6	41.42	16.5
24.7	31.84	58.6	27.93	39.5	58.85	71.3	12.97	16.2	42.68	16.4
34.7	32.29	61.4	28.24	37.7	59.96	73.7	13.34	15.2	43.88	16.8

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Majoris.		η Octantis.		ρ^3 Leonis.		ψ Ursæ Majoris.		δ Leonis.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 10 58	° ' " +62 14	h m 10 59	° ' " -84 5	h m 11 2	° ' " + 2 27	h m 11 4	° ' " +44 59	h m 11 9	° ' " +21 1
	s	"	s	"	s	"	s	"	s	"
Jan. 0.7	3.19	40.7	65.55	32.3	12.21	22.2	29.22	43.7	12.49	38.0
10.7	3.76	41.0	67.29	34.8	12.51	20.3	29.62	43.3	12.81	36.6
20.6	4.27	41.8	68.77	37.7	12.78	18.5	29.99	43.3	13.11	35.6
30.6	4.71	43.2	69.95	41.0	13.02	16.9	30.31	43.8	13.37	34.9
Feb. 9.6	5.07	45.0	70.79	44.6	13.21	15.6	30.57	44.8	13.58	34.6
19.5	5.34	47.2	71.30	48.4	13.36	14.5	30.78	46.2	13.75	34.6
29.5	5.51	49.7	71.47	52.3	13.46	13.7	30.92	47.9	13.87	34.9
Mar. 10.5	5.58	52.3	71.30	56.2	13.52	13.1	30.99	49.8	13.94	35.5
20.5	5.57	55.0	70.79	60.0	13.53	12.8	31.01	51.8	13.97	36.3
30.4	5.47	57.6	69.99	63.6	13.51	12.8	30.97	53.9	13.95	37.3
Apr. 9.4	5.30	60.1	68.90	67.0	13.46	12.9	30.88	56.0	13.90	38.3
19.4	5.07	62.3	67.56	70.0	13.38	13.1	30.76	57.9	13.83	39.4
29.4	4.79	64.2	66.00	72.7	13.29	13.5	30.60	59.6	13.73	40.5
May 9.3	4.48	65.7	64.26	75.0	13.19	14.0	30.43	61.1	13.62	41.6
19.3	4.15	66.7	62.38	76.7	13.08	14.6	30.24	62.2	13.50	42.5
29.3	3.81	67.3	60.39	78.0	12.97	15.2	30.05	63.0	13.38	43.3
June 8.2	3.49	67.4	58.36	78.7	12.86	15.8	29.87	63.5	13.27	44.0
18.2	3.18	67.0	56.31	78.9	12.76	16.5	29.70	63.5	13.16	44.5
28.2	2.90	66.1	54.31	78.5	12.67	17.2	29.54	63.2	13.06	44.8
July 8.2	2.65	64.8	52.41	77.5	12.59	17.8	29.40	62.5	12.97	44.9
18.1	2.44	63.1	50.65	76.0	12.53	18.4	29.29	61.5	12.90	44.8
28.1	2.28	61.0	49.10	74.1	12.48	18.9	29.20	60.2	12.84	44.5
Aug. 7.1	2.17	58.6	47.80	71.8	12.45	19.3	29.15	58.5	12.80	44.1
17.1	2.12	55.9	46.79	69.1	12.44	19.6	29.13	56.6	12.79	43.4
27.0	2.13	53.0	46.12	66.2	12.46	19.8	29.14	54.4	12.80	42.5
Sept. 6.0	2.20	49.9	45.81	63.1	12.50	19.8	29.19	52.0	12.85	41.3
16.0	2.33	46.6	45.88	60.0	12.57	19.6	29.28	49.4	12.92	40.0
25.9	2.53	43.3	46.34	56.9	12.68	19.2	29.42	46.7	13.03	38.5
Oct. 5.9	2.80	40.0	47.18	54.1	12.83	18.5	29.61	43.9	13.18	36.7
15.9	3.14	36.8	48.37	51.6	13.01	17.5	29.84	41.0	13.37	34.8
25.9	3.54	33.7	49.89	49.5	13.23	16.3	30.12	38.2	13.59	32.8
Nov. 4.8	4.01	30.8	51.66	47.9	13.48	14.8	30.45	35.5	13.85	30.6
14.8	4.53	28.3	53.65	46.9	13.77	13.1	30.82	32.9	14.15	28.4
24.8	5.09	26.1	55.76	46.6	14.08	11.2	31.22	30.6	14.48	26.2
Dec. 4.8	5.69	24.4	57.93	46.9	14.40	9.1	31.64	28.6	14.82	24.0
14.7	6.30	23.2	60.07	47.8	14.73	7.0	32.08	26.9	15.17	22.0
24.7	6.91	22.5	62.11	49.4	15.06	4.9	32.52	25.7	15.52	20.2
34.7	7.50	22.4	63.98	51.6	15.38	2.9	32.94	24.9	15.86	18.6

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

347

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	25 Camelop. (H.).		4 Geminorum.		Piazzii vii. 67.		3 Canis Minoris.		α ² Geminorum. (Castor.)	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m	° ' "	h m	° ' "	h m	° ' "	h m	° ' "	h m	° ' "
	7 11	82 35	7 14	+22 9	7 21	-68 38	7 22	+ 8 28	7 28	+32 5
Jan. 0.5	52.52	22.8	38.05	5.3	20.46	71.7	10.02	28.6	44.16	24.4
10.5	53.06	25.9	38.19	5.2	20.74	74.2	10.15	27.6	44.32	24.9
20.5	53.26	29.1	38.28	5.3	20.89	76.8	10.23	26.8	44.43	25.5
30.5	53.11	32.2	38.31	5.5	20.91	79.5	10.27	26.2	44.48	26.3
Feb 9.4	52.62	35.1	38.29	5.8	20.81	82.1	10.25	25.7	44.48	27.1
19.4	51.83	37.8	38.22	6.1	20.59	84.5	10.19	25.4	44.41	28.0
29.4	50.77	40.1	38.11	6.6	20.27	86.6	10.09	25.2	44.30	28.9
Mar. 10.3	49.49	42.0	37.97	7.0	19.87	88.3	9.95	25.2	44.16	29.7
20.3	48.05	43.3	37.80	7.4	19.40	89.6	9.80	25.3	43.98	30.4
30.3	46.53	44.0	37.62	7.7	18.90	90.5	9.63	25.4	43.79	31.0
Apr. 9.3	44.98	44.2	37.44	8.0	18.39	90.9	9.46	25.7	43.59	31.4
19.2	43.47	43.8	37.27	8.3	17.89	90.7	9.30	26.1	43.40	31.7
29.2	42.07	42.9	37.12	8.5	17.43	90.1	9.15	26.5	43.23	31.8
May 9.2	40.83	41.4	36.99	8.6	17.02	89.1	9.03	27.0	43.08	31.7
19.2	39.79	39.5	36.90	8.7	16.69	87.6	8.94	27.5	42.97	31.5
June 29.1	38.98	37.3	36.84	8.8	16.44	85.8	8.88	28.1	42.89	31.1
8.1	38.44	34.7	36.83	8.8	16.29	83.8	8.85	28.8	42.86	30.7
18.1	38.18	31.9	36.85	8.8	16.24	81.5	8.86	29.5	42.87	30.2
28.0	38.20	29.0	36.91	8.8	16.28	79.1	8.91	30.2	42.92	29.6
July 8.0	38.51	26.0	37.01	8.8	16.43	76.6	8.99	31.0	43.01	29.0
18.0	39.09	23.0	37.14	8.7	16.67	74.1	9.11	31.7	43.14	28.3
28.0	39.94	20.2	37.31	8.7	17.00	71.6	9.25	32.4	43.31	27.6
Aug. 6.9	41.04	17.5	37.51	8.6	17.42	69.3	9.43	33.1	43.51	26.9
16.9	42.37	15.0	37.73	8.4	17.91	67.0	9.63	33.6	43.74	26.2
26.9	43.89	12.7	37.98	8.2	18.47	65.0	9.85	34.0	44.00	25.4
Sept 5.9	45.58	10.5	38.25	8.0	19.09	63.2	10.09	34.2	44.28	24.7
15.8	47.42	9.2	38.54	7.6	19.76	61.6	10.36	34.2	44.59	23.9
25.8	49.37	8.0	38.84	7.2	20.48	60.4	10.64	34.0	44.91	23.2
Oct 5.8	51.39	7.3	39.15	6.6	21.22	59.5	10.93	33.6	45.25	22.4
15.7	53.45	7.0	39.48	6.0	21.99	59.0	11.23	33.0	45.60	21.7
Nov 25.7	55.51	7.2	39.81	5.4	22.76	58.5	11.53	32.2	45.96	21.0
4.7	57.53	7.8	40.14	4.7	23.52	59.0	11.84	31.2	46.32	20.4
14.7	59.45	8.9	40.46	4.0	24.26	59.7	12.14	30.0	46.68	19.9
24.6	61.23	10.5	40.77	3.4	24.96	60.8	12.43	28.8	47.02	19.5
Dec 4.6	62.82	12.6	41.05	2.8	25.61	62.2	12.70	27.6	47.34	19.3
14.6	64.18	15.0	41.31	2.3	26.17	64.0	12.94	26.3	47.63	19.3
24.6	65.26	17.7	41.53	2.0	26.64	66.2	13.15	25.2	47.88	19.5
34.5	66.03	20.7	41.70	1.8	27.00	68.6	13.32	24.1	48.08	19.8

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Leonis.			γ Ursæ Majoris.			β Leonis.			δ Ursæ Majoris.			π Virginis.		
	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.
	h m	s	°	h m	s	°	h m	s	°	h m	s	°	h m	s	°
	11 32		0 18	11 41		+48 16	11 44		+15 4	11 48		+54 11	11 56		+7 7
Jan. 0.7	13.66		51.7	11.05		73.0	21.34		70.8	58.99		72.0	8.72		41.1
10.7	13.98	.32	53.7	11.49	.44	72.3	21.67	.33	69.1	59.48	.49	71.4	9.04	.32	39.1
20.7	14.26	.28	55.7	11.90	.41	72.1	21.97	.30	67.6	59.94	.46	71.4	9.34	.30	37.4
30.6	14.52	.26	57.5	12.27	.37	72.4	22.25	.28	66.5	60.36	.42	71.9	9.62	.28	35.8
Feb. 9.6	14.74	.22	59.0	12.58	.31	73.3	22.48	.23	65.7	60.72	.36	72.9	9.86	.24	34.6
		.17			.26			.20			.30			.20	
19.6	14.91		60.3	12.84		74.6	22.68		65.3	61.02		74.4	10.06		33.7
29.6	15.04	.13	61.3	13.04	.20	76.3	22.83	.15	65.1	61.25	.23	76.3	10.21	.15	33.1
Mar. 10.5	15.12	.08	62.0	13.17	.13	78.3	22.93	.10	65.3	61.40	.15	78.6	10.33	.12	32.8
20.5	15.17	.05	62.5	13.23	.06	80.5	22.99	.06	65.8	61.48	.08	81.0	10.40	.07	32.7
30.5	15.18	.01	62.7	13.24	.01	82.8	23.01	.02	66.4	61.49	.01	83.5	10.43	.03	32.9
		.02			.05			.02			.05			.00	
Apr. 9.4	15.16		62.8	13.19		85.1	22.99		67.2	61.44		86.1	10.43		33.3
19.4	15.11	.05	62.6	13.09	.10	87.3	22.95	.04	68.2	61.33	.11	88.5	10.40	.03	33.8
29.4	15.04	.07	62.3	12.96	.13	89.4	22.88	.07	69.2	61.18	.15	90.7	10.35	.07	34.5
May 9.4	14.96	.08	61.9	12.80	.16	91.2	22.80	.08	70.1	60.99	.19	92.6	10.28	.07	35.2
19.3	14.86	.10	61.4	12.61	.19	92.7	22.70	.10	71.1	60.78	.21	94.2	10.19	.09	36.0
		.10			.19			.10			.24			.09	
29.3	14.76		60.9	12.42		93.8	22.60		72.0	60.54		95.4	10.10		36.7
June 8.3	14.66	.10	60.2	12.22	.20	94.5	22.49	.11	72.7	60.30	.24	96.2	10.00	.10	37.4
18.3	14.56	.10	59.6	12.02	.20	94.9	22.38	.11	73.4	60.06	.24	96.5	9.90	.10	38.1
28.2	14.46	.09	58.9	11.83	.19	94.8	22.28	.10	73.9	59.83	.23	96.4	9.80	.10	38.7
July 8.2	14.37	.08	58.3	11.65	.18	94.3	22.18	.09	74.3	59.61	.22	95.8	9.70	.09	39.3
		.08			.16			.09			.20			.09	
18.2	14.29		57.6	11.49		93.5	22.09		74.5	59.41		94.8	9.61		39.7
28.1	14.22	.07	57.0	11.35	.14	92.2	22.01	.08	74.5	59.23	.18	93.4	9.53	.08	40.0
Aug. 7.1	14.17	.05	56.5	11.24	.11	90.6	21.95	.06	74.4	59.08	.15	91.6	9.46	.07	40.2
17.1	14.13	.04	56.1	11.16	.08	88.6	21.90	.05	74.0	58.97	.11	89.4	9.41	.05	40.3
27.1	14.12	.01	55.8	11.11	.05	86.3	21.88	.02	73.4	58.90	.07	86.9	9.38	.03	40.1
		.01			.00			.01			.02			.01	
Sept. 6.0	14.13		55.7	11.11		83.8	21.89		72.6	58.88		84.2	9.37		39.8
16.0	14.18	.05	55.8	11.15	.04	81.0	21.92	.03	71.6	58.90	.08	81.2	9.39	.02	39.3
26.0	14.26	.08	56.1	11.23	.08	78.1	21.99	.07	70.4	58.98	.12	78.0	9.45	.06	38.5
Oct. 6.0	14.37	.11	56.6	11.37	.14	75.0	22.10	.11	68.9	59.11	.13	74.7	9.54	.09	37.5
15.9	14.53	.16	57.4	11.56	.19	71.9	22.24	.14	67.3	59.30	.19	71.4	9.68	.14	36.2
		.19			.24			.19			.26			.17	
25.9	14.72		58.5	11.80		68.8	22.43		65.4	59.56		68.1	9.85		34.7
Nov. 4.9	14.96	.24	59.9	12.10	.30	65.7	22.66	.23	63.3	59.87	.31	64.8	10.07	.22	33.0
14.9	15.22	.26	61.5	12.44	.34	62.8	22.92	.26	61.1	60.24	.37	61.8	10.32	.25	31.1
24.8	15.52	.30	63.4	12.83	.39	60.1	23.22	.30	58.9	60.66	.42	59.0	10.60	.28	29.0
Dec. 4.8	15.84	.32	65.4	13.26	.43	57.7	23.54	.32	56.6	61.12	.46	56.6	10.92	.32	26.8
		.33			.44			.34			.49			.33	
14.8	16.17		67.5	13.70		55.7	23.88		54.4	61.61		54.5	11.25		24.6
24.7	16.51	.34	69.7	14.16	.46	54.1	24.22	.34	52.3	62.12	.51	53.0	11.59	.34	22.5
34.7	16.83	.32	71.8	14.61	.45	53.0	24.56	.34	50.4	62.62	.50	52.0	11.92	.33	20.4

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

361

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Virginis.		γ Corvi.		δ Draconis (H.).		γ Corvi.		ζ Canum Venat.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m 12 0	° ' " + 9 14	h m 12 5	° ' " - 22 6	h m 12 7	° ' " + 78 7	h m 12 11	° ' " - 17 1	h m 12 11	° ' " + 41 9
Jan. 0.7	30.57	40.0	22.74	16.3	52.98	25.4	3.57	40.5	30.25	72.1
10.7	30.89	38.1	23.07	18.6	54.19	25.2	3.90	42.8	30.65	70.9
20.7	31.20	36.4	23.39	21.0	55.35	25.6	4.21	45.1	31.04	70.1
30.7	31.48	35.0	23.67	23.5	56.42	26.7	4.49	47.4	31.39	69.9
Feb. 9.6	31.72	33.8	23.92	25.9	57.37	28.4	4.74	49.6	31.71	70.2
19.6	31.93	33.0	24.13	28.2	58.17	30.5	4.95	51.7	31.98	71.0
29.6	32.09	32.5	24.29	30.4	58.78	33.1	5.12	53.7	32.19	72.2
Mar. 10.5	32.20	32.3	24.41	32.4	59.20	36.0	5.24	55.4	32.35	73.7
20.5	32.28	32.4	24.49	34.2	59.41	39.0	5.33	56.9	32.45	75.6
30.5	32.32	32.8	24.53	35.8	59.43	42.1	5.38	58.2	32.50	77.6
Apr. 9.5	32.32	33.3	24.53	37.1	59.25	45.1	5.39	59.2	32.50	79.7
19.4	32.30	33.9	24.51	38.2	58.89	47.9	5.37	60.0	32.45	81.9
29.4	32.25	34.7	24.46	39.1	58.38	50.5	5.33	60.6	32.37	83.9
May 9.4	32.18	35.5	24.39	39.7	57.74	52.7	5.27	61.0	32.26	85.8
19.4	32.09	36.3	24.30	40.0	57.00	54.4	5.19	61.1	32.13	87.5
29.3	32.00	37.1	24.20	40.1	56.18	55.6	5.10	61.1	31.98	88.9
June 8.3	31.90	37.9	24.09	40.0	55.32	56.2	5.00	60.8	31.82	89.9
18.3	31.80	38.6	23.98	39.7	54.43	56.3	4.89	60.4	31.66	90.6
28.2	31.70	39.2	23.86	39.1	53.55	55.9	4.78	59.9	31.49	91.0
July 8.2	31.60	39.7	23.74	38.3	52.71	54.9	4.67	59.1	31.33	90.9
18.2	31.51	40.1	23.63	37.4	51.91	53.4	4.56	58.3	31.18	90.5
28.2	31.42	40.4	23.52	36.3	51.19	51.4	4.46	57.3	31.04	89.7
Aug. 7.1	31.35	40.5	23.42	35.1	50.56	49.0	4.37	56.3	30.92	88.5
17.1	31.29	40.4	23.34	33.8	50.03	46.2	4.29	55.3	30.82	87.0
27.1	31.26	40.2	23.29	32.6	49.62	43.1	4.23	54.2	30.75	85.2
Sept. 6.1	31.25	39.7	23.26	31.3	49.34	39.6	4.20	53.3	30.71	83.0
16.0	31.26	39.1	23.26	30.2	49.20	36.0	4.20	52.4	30.71	80.6
26.0	31.31	38.2	23.30	29.2	49.22	32.2	4.24	51.7	30.75	78.0
Oct. 6.0	31.40	37.0	23.39	28.5	49.39	28.4	4.32	51.3	30.83	75.2
15.9	31.53	35.6	23.52	28.0	49.72	24.6	4.44	51.1	30.97	72.2
25.9	31.70	34.0	23.69	27.9	50.22	20.9	4.61	51.3	31.15	69.2
Nov. 4.9	31.91	32.2	23.91	28.2	50.87	17.4	4.82	51.8	31.39	66.1
14.9	32.16	30.2	24.17	28.8	51.68	14.2	5.07	52.6	31.67	63.1
24.8	32.45	28.1	24.47	29.8	52.62	11.3	5.36	53.8	32.00	60.2
Dec. 4.8	32.76	25.9	24.80	31.2	53.68	8.9	5.67	55.3	32.37	57.5
14.8	33.09	23.6	25.14	32.9	54.83	7.1	6.01	57.1	32.76	55.1
24.8	33.43	21.5	25.49	34.9	56.03	5.8	6.35	59.2	33.17	53.1
34.7	33.76	19.4	25.84	37.1	57.25	5.2	6.69	61.4	33.58	51.5

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Chamæleonis.			γ Virginis.			α^1 Crucis.			δ Corvi.			δ Canum Venat.		
	Right Ascension.	Declina- tion South.		Right Ascension.	Declina- tion South.		Right Ascension.	Declina- tion South.		Right Ascension.	Declina- tion South.		Right Ascension.	Declina- tion North.	
	h m	°		h m	°		h m	°		h m	°		h m	°	
	12 12	-78 47		12 15	-0 9		12 21	-62 34		12 25	-16 0		12 29	+41 50	
	s	"		s	"		s	"		s	"		s	"	
Jan. 0.7	56.32	38.6	1.18	11.06	14.7	2.1	27.84	57.2	2.0	5.25	0.7	2.2	21.56	78.4	1.4
10.7	57.50	40.3	2.3	11.38	16.8	2.0	28.41	59.2	2.3	5.59	2.9	2.3	21.96	77.0	0.9
20.7	58.60	42.6	2.7	11.69	18.8	1.8	28.94	61.5	2.8	5.90	5.2	2.2	22.36	76.1	0.3
30.7	59.58	45.3	3.1	11.97	20.6	1.6	29.42	64.3	3.1	6.19	7.4	2.2	22.72	75.8	0.1
Feb. 9.6	60.43	48.4	3.5	12.22	22.2	1.3	29.85	67.4	3.3	6.45	9.6	2.1	23.05	75.9	0.7
19.6	61.12	51.9	3.6	12.43	23.5	1.0	30.21	70.7	3.5	6.67	11.7	1.9	23.34	76.6	1.2
29.6	61.65	55.5	3.8	12.60	24.5	0.8	30.49	74.2	3.6	6.86	13.6	1.6	23.57	77.8	1.5
Mar. 10.5	62.01	59.3	3.9	12.73	25.3	0.5	30.69	77.8	3.5	7.00	15.2	1.5	23.75	79.3	1.8
20.5	62.19	63.2	3.7	12.82	25.8	0.2	30.83	81.3	3.4	7.10	16.7	1.2	23.87	81.1	2.1
30.5	62.21	66.9	3.7	12.88	26.0	0.1	30.89	84.7	3.3	7.16	17.9	1.0	23.94	83.2	2.2
Apr. 9.5	62.06	70.6	3.5	12.90	26.1	0.2	30.88	88.0	3.0	7.19	18.9	0.8	23.96	85.4	2.2
19.4	61.75	74.1	3.2	12.89	25.9	0.3	30.80	91.0	2.8	7.19	19.7	0.5	23.94	87.6	2.2
29.4	61.30	77.3	2.9	12.85	25.6	0.4	30.67	93.8	2.5	7.16	20.2	0.4	23.87	89.8	2.0
May 9.4	60.72	80.2	2.5	12.80	25.2	0.5	30.49	96.3	2.0	7.11	20.6	0.1	23.77	91.8	1.9
19.4	60.02	82.7	2.0	12.73	24.7	0.6	30.26	98.3	1.7	7.04	20.7	0.0	23.65	93.7	1.5
29.3	59.22	84.7	1.6	12.65	24.1	0.6	29.99	100.0	1.2	6.96	20.7	0.2	23.50	95.2	1.2
June 8.3	58.33	86.3	1.0	12.56	23.5	0.7	29.68	101.2	0.7	6.86	20.5	0.4	23.34	96.4	0.9
18.3	57.39	87.3	0.5	12.46	22.8	0.6	29.35	101.9	0.2	6.76	20.1	0.5	23.18	97.3	0.5
28.2	56.41	87.8	0.1	12.36	22.2	0.6	29.01	102.1	0.2	6.65	19.6	0.7	23.01	97.8	0.1
July 8.2	55.42	87.7	0.6	12.26	21.6	0.6	28.65	101.9	0.8	6.54	18.9	0.8	22.84	97.9	0.3
18.2	54.44	87.1	1.1	12.16	21.0	0.6	28.30	101.1	1.2	6.43	18.1	0.8	22.67	97.6	0.7
28.2	53.51	86.0	1.6	12.07	20.4	0.4	27.96	99.9	1.6	6.32	17.3	1.0	22.52	96.9	1.1
Aug. 7.1	52.66	84.4	2.1	11.99	20.0	0.4	27.65	98.3	2.0	6.22	16.3	0.9	22.38	95.8	1.4
17.1	51.91	82.3	2.5	11.92	19.6	0.2	27.37	96.3	2.3	6.14	15.4	0.9	22.26	94.4	1.8
27.1	51.30	79.8	2.7	11.87	19.4	0.1	27.14	94.0	2.5	6.07	14.5	0.9	22.16	92.6	2.1
Sept. 6.1	50.85	77.1	3.0	11.84	19.3	0.1	26.98	91.5	2.7	6.03	13.6	0.8	22.09	90.5	2.4
16.0	50.58	74.1	3.0	11.84	19.4	0.4	26.88	88.8	2.7	6.02	12.8	0.6	22.06	88.1	2.6
26.0	50.51	71.1	3.0	11.88	19.8	0.6	26.87	86.1	2.6	6.04	12.2	0.4	22.07	85.5	2.8
Oct. 6.0	50.66	68.1	2.8	11.96	20.4	0.8	26.95	83.5	2.4	6.10	11.8	0.1	22.13	82.7	3.1
15.9	51.02	65.3	2.6	12.07	21.2	1.1	27.12	81.1	2.2	6.21	11.7	0.2	22.24	79.6	3.1
25.9	51.58	62.7	2.2	12.22	22.3	1.3	27.38	78.9	1.7	6.36	11.9	0.5	22.40	76.5	3.2
Nov. 4.9	52.33	60.5	1.7	12.42	23.6	1.6	27.73	77.2	1.3	6.56	12.4	0.8	22.61	73.3	3.1
14.9	53.25	58.8	1.2	12.66	25.2	1.9	28.16	75.9	0.7	6.80	13.2	1.2	22.87	70.2	3.0
24.8	54.31	57.6	0.5	12.94	27.1	2.0	28.65	75.2	0.2	7.08	14.4	1.5	23.18	67.2	2.8
Dec. 4.8	55.47	57.1	0.1	13.24	29.1	2.1	29.19	75.0	0.4	7.39	15.9	1.7	23.53	64.4	2.5
14.8	56.69	57.2	0.7	13.56	31.2	2.2	29.77	75.4	1.1	7.72	17.6	2.0	23.92	61.9	2.2
24.8	57.93	57.9	1.4	13.90	33.4	2.2	30.36	76.5	1.6	8.06	19.6	2.2	24.32	59.7	1.7
34.7	59.14	59.3		14.23	35.6		30.94	78.1		8.40	21.8		24.73	58.0	

FIXED STARS, 1908.

363

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Corvi.		κ Draconis.		γ Virginis (mean).		31 Comæ Berenices.		32 ^d Camelop. (H.).	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 12 29	° ' " -22 53	h m 12 29	° ' " +70 17	h m 12 36	° ' " - 0 56	h m 12 47	° ' " +28 2	h m 12 48	° ' " +83 54
Jan. 0.7	32.19	3.5	32.46	30.2	58.92	35.8	11.96	24.5	23.96	33.3
10.7	32.53	5.7	33.24	29.5	59.25	37.9	12.32	22.6	26.18	32.7
20.7	32.86	8.0	34.00	29.5	59.56	39.9	12.67	21.2	28.39	32.7
30.7	33.16	10.4	34.71	30.0	59.85	41.7	13.00	20.2	30.50	33.4
Feb. 9.6	33.43	12.7	35.35	31.2	60.12	43.3	13.30	19.7	32.45	34.7
19.6	33.66	15.0	35.91	33.0	60.34	44.7	13.56	19.6	34.17	36.5
29.6	33.85	17.2	36.36	35.2	60.53	45.8	13.78	20.0	35.59	38.9
Mar. 10.6	33.99	19.2	36.69	37.8	60.68	46.6	13.96	20.8	36.67	41.6
20.5	34.10	21.1	36.90	40.6	60.79	47.2	14.09	21.9	37.38	44.6
30.5	34.17	22.7	36.99	43.6	60.87	47.5	14.18	23.2	37.70	47.7
Apr. 9.5	34.20	24.1	36.96	46.6	60.91	47.6	14.23	24.8	37.64	50.8
19.4	34.20	25.3	36.82	49.5	60.92	47.5	14.24	26.5	37.21	53.8
29.4	34.18	26.2	36.59	52.1	60.90	47.2	14.22	28.2	36.44	56.6
May 9.4	34.13	26.9	36.27	54.5	60.86	46.8	14.17	29.9	35.36	59.0
19.4	34.06	27.4	35.88	56.5	60.81	46.3	14.09	31.5	34.03	61.1
29.3	33.97	27.6	35.44	58.1	60.74	45.7	14.00	33.0	32.48	62.7
June 8.3	33.87	27.6	34.97	59.1	60.65	45.1	13.89	34.2	30.78	63.8
18.3	33.76	27.4	34.47	59.7	60.56	44.5	13.77	35.2	28.98	64.3
28.3	33.65	27.0	33.96	59.7	60.46	43.9	13.64	35.9	27.13	64.2
July 8.2	33.53	26.3	33.47	59.2	60.36	43.2	13.51	36.4	25.27	63.6
18.2	33.41	25.5	32.99	58.1	60.25	42.6	13.38	36.5	23.47	62.5
28.2	33.29	24.6	32.54	56.6	60.15	42.1	13.26	36.3	21.75	60.9
Aug. 7.1	33.18	23.5	32.14	54.6	60.05	41.6	13.14	35.8	20.17	58.8
17.1	33.08	22.3	31.79	52.2	59.97	41.3	13.04	35.1	18.76	56.2
27.1	33.00	21.1	31.50	49.4	59.90	41.0	12.95	34.0	17.54	53.2
Sept. 6.1	32.95	19.9	31.29	46.2	59.86	40.9	12.88	32.6	16.56	49.9
16.0	32.93	18.8	31.16	42.8	59.84	41.0	12.84	30.9	15.83	46.4
26.0	32.95	17.8	31.12	39.2	59.85	41.3	12.84	29.0	15.38	42.6
Oct. 6.0	33.01	17.0	31.18	35.5	59.90	41.8	12.88	26.8	15.23	38.8
16.0	33.11	16.5	31.34	31.7	59.99	42.6	12.96	24.4	15.39	34.9
25.9	33.26	16.3	31.60	27.9	60.13	43.6	13.09	21.8	15.88	31.0
Nov. 4.9	33.47	16.4	31.97	24.3	60.31	44.9	13.26	19.0	16.69	27.3
14.9	33.71	16.8	32.44	20.8	60.53	46.5	13.48	16.2	17.81	23.8
24.8	33.99	17.7	33.00	17.6	60.79	48.3	13.75	13.4	19.23	20.6
Dec. 4.8	34.31	18.9	33.65	14.9	61.08	50.3	14.06	10.7	20.92	17.9
14.8	34.65	20.5	34.36	12.6	61.40	52.4	14.39	8.1	22.84	15.6
24.8	35.00	22.4	35.11	10.9	61.73	54.5	14.74	5.7	24.92	13.9
34.7	35.35	24.5	35.89	9.8	62.06	56.7	15.11	3.6	27.11	12.8

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Canum Venat.			δ Muscæ.			ϵ Virginis.			θ Virginis.			20 Canum Venat.		
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.		Right Ascension.	Declina- tion North.	
	h m	°		h m	°		h m	°		h m	°		h m	°	
	12 51	+38 48		12 55	-71 2		12 57	+11 26		13 5	- 5 2		13 13	+41 2	
	s	"		s	"		s	"		s	"		s	"	
Jan. 0.8	42.37	47.5	1.7	54.47	44.1	1.3	34.68	74.2	2.1	9.93	45.3	23.85	77.5	1.9	
10.7	42.76	45.8	1.2	55.26	45.4	1.8	35.02	72.1	1.8	10.26	47.4	24.25	75.6	1.3	
20.7	43.14	44.6	0.6	56.03	47.2	2.3	35.34	70.3	1.6	10.58	49.5	24.65	74.3	0.8	
30.7	43.51	44.0	0.2	56.74	49.5	2.8	35.65	68.7	1.2	10.89	51.4	25.03	73.5	0.3	
Feb. 9.7	43.84	43.8	0.4	57.39	52.3	3.1	35.93	67.5	0.8	11.17	53.2	25.38	73.2	0.3	
19.6	44.13	44.2	0.9	57.96	55.4	3.3	36.18	66.7	0.5	11.42	54.8	25.70	73.5	0.8	
29.6	44.38	45.1	1.3	58.44	58.7	3.5	36.39	66.2	0.2	11.63	56.1	25.98	74.3	1.3	
Mar. 10.6	44.58	46.4	1.6	58.82	62.2	3.6	36.56	66.0	0.2	11.81	57.1	26.21	75.6	1.7	
20.5	44.73	48.0	1.9	59.10	65.8	3.6	36.70	66.2	0.4	11.95	57.9	26.38	77.3	2.0	
30.5	44.83	49.9	2.1	59.28	69.4	3.6	36.79	66.6	0.7	12.05	58.4	26.51	79.3	2.1	
Apr. 9.5	44.88	52.0	2.2	59.36	73.0	3.4	36.85	67.3	0.8	12.12	58.8	26.58	81.4	2.3	
19.5	44.88	54.2	2.1	59.35	76.4	3.2	36.88	68.1	1.0	12.16	58.9	26.61	83.7	2.3	
29.4	44.85	56.3	2.1	59.24	79.6	2.9	36.88	69.1	1.1	12.17	58.8	26.60	86.0	2.3	
May 9.4	44.78	58.4	1.9	59.05	82.5	2.6	36.85	70.2	1.0	12.16	58.6	26.55	88.3	2.1	
19.4	44.68	60.3	1.7	58.78	85.1	2.3	36.81	71.2	1.0	12.13	58.3	26.47	90.4	1.8	
29.4	44.57	62.0	1.3	58.44	87.4	1.8	36.74	72.2	1.0	12.08	57.9	26.36	92.2	1.6	
June 8.3	44.43	63.3	1.1	58.04	89.2	1.4	36.66	73.2	0.8	12.01	57.4	26.22	93.8	1.3	
18.3	44.28	64.4	0.7	57.58	90.6	0.8	36.57	74.0	0.8	11.92	56.8	26.07	95.1	0.9	
28.3	44.12	65.1	0.3	57.07	91.4	0.4	36.47	74.8	0.6	11.83	56.2	25.91	96.0	0.5	
July 8.2	43.96	65.4	0.0	56.54	91.8	0.2	36.36	75.4	0.4	11.73	55.7	25.73	96.5	0.1	
18.2	43.80	65.4	0.4	56.00	91.6	0.7	36.25	75.8	0.3	11.62	55.1	25.56	96.6	0.4	
28.2	43.64	65.0	0.8	55.46	90.9	1.2	36.14	76.1	0.1	11.51	54.5	25.38	96.2	0.7	
Aug. 7.2	43.49	64.2	1.2	54.94	89.7	1.6	36.03	76.2	0.1	11.40	54.0	25.21	95.5	1.1	
17.1	43.36	63.0	1.6	54.46	88.1	2.1	35.93	76.1	0.3	11.30	53.5	25.05	94.4	1.5	
27.1	43.25	61.4	1.9	54.04	86.0	2.4	35.85	75.8	0.5	11.21	53.1	24.91	92.9	1.8	
Sept. 6.1	43.16	59.5	2.1	53.70	83.6	2.6	35.79	75.3	0.8	11.14	52.8	24.79	91.1	2.2	
16.1	43.10	57.4	2.5	53.46	81.0	2.8	35.75	74.5	1.0	11.09	52.7	24.70	88.9	2.5	
26.0	43.09	54.9	2.7	53.33	78.2	2.9	35.74	73.5	1.2	11.08	52.7	24.66	86.4	2.8	
Oct. 6.0	43.11	52.2	2.9	53.32	75.3	2.7	35.77	72.3	1.5	11.10	53.0	24.65	83.6	3.0	
16.0	43.19	49.3	3.1	53.44	72.6	2.6	35.84	70.8	1.8	11.17	53.5	24.69	80.6	3.2	
25.9	43.32	46.2	3.1	53.69	70.0	2.3	35.95	69.0	2.0	11.28	54.3	24.79	77.4	3.3	
Nov. 4.9	43.50	43.1	3.2	54.07	67.7	1.9	36.11	67.0	2.1	11.43	55.3	24.94	74.1	3.3	
14.9	43.73	39.9	3.1	54.57	65.8	1.4	36.31	64.9	2.3	11.63	56.6	25.15	70.8	3.2	
24.9	44.01	36.8	2.9	55.18	64.4	0.8	36.56	62.6	2.3	11.88	58.2	25.41	67.6	3.1	
Dec. 4.8	44.33	33.9	2.7	55.87	63.6	0.3	36.84	60.3	2.4	12.16	60.0	25.72	64.5	2.9	
14.8	44.69	31.2	2.4	56.63	63.3	0.4	37.15	57.9	2.4	12.46	62.0	26.07	61.6	2.6	
24.8	45.07	28.8	2.0	57.42	63.7	0.9	37.48	55.5	2.2	12.79	64.0	26.45	59.0	2.1	
34.8	45.47	26.8		58.22	64.6		37.82	53.3		13.12	66.2	26.85	56.9		

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	<i>a</i> Virginis. (<i>Spica</i> .)		<i>κ</i> Octantis.		<i>ζ</i> Virginis.		B. A. C. 4536.		<i>m</i> Virginis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 13 20	° ' " 40	h m 13 25	° ' " 18	h m 13 29	° ' " 7	h m 13 30	° ' " 38	h m 13 36	° ' " 14
Jan. 0.8	19.41	43.1	48.78	27.5	58.92	26.8	40.02	66.9	45.53	11.8
10.8	19.74	45.1	51.67	28.0	59.25	28.9	40.40	64.9	45.86	13.8
20.7	20.07	47.2	54.53	29.1	59.57	30.9	40.79	63.3	46.19	15.8
30.7	20.39	49.2	57.27	30.8	59.89	32.7	41.16	62.2	46.50	17.8
Feb. 9.7	20.68	51.1	59.83	33.0	60.18	34.3	41.51	61.7	46.80	19.6
19.6	20.94	52.8	62.15	35.7	60.44	35.7	41.82	61.7	47.07	21.2
29.6	21.16	54.4	64.18	38.7	60.67	36.8	42.10	62.3	47.31	22.6
Mar. 10.6	21.35	55.7	65.87	42.1	60.87	37.6	42.34	63.3	47.51	23.8
20.6	21.51	56.8	67.21	45.7	61.03	38.1	42.53	64.8	47.68	24.7
30.6	21.63	57.7	68.16	49.4	61.16	38.3	42.67	66.6	47.82	25.4
Apr. 9.5	21.72	58.3	68.72	53.2	61.25	38.3	42.77	68.6	47.92	25.9
19.5	21.78	58.7	68.88	56.9	61.32	38.1	42.82	70.8	47.99	26.2
29.5	21.80	59.0	68.65	60.5	61.35	37.7	42.83	73.0	48.04	26.3
May 9.4	21.80	59.1	68.02	64.0	61.36	37.2	42.81	75.2	48.06	26.3
19.4	21.78	59.0	67.03	67.2	61.34	36.6	42.75	77.3	48.05	26.1
29.4	21.74	58.9	65.69	70.1	61.31	36.0	42.66	79.2	48.02	25.8
June 8.3	21.68	58.6	64.03	72.7	61.25	35.3	42.55	80.9	47.97	25.4
18.3	21.60	58.2	62.09	74.7	61.18	34.6	42.42	82.3	47.90	25.0
28.3	21.51	57.7	59.93	76.3	61.09	34.0	42.28	83.3	47.81	24.5
July 8.3	21.41	57.2	57.60	77.4	60.99	33.4	42.12	84.0	47.71	24.0
18.2	21.30	56.7	55.17	77.9	60.88	32.8	41.95	84.3	47.60	23.4
28.2	21.18	56.0	52.70	77.9	60.76	32.3	41.78	84.2	47.48	22.9
Aug. 7.2	21.06	55.4	50.28	77.2	60.65	31.8	41.61	83.8	47.36	22.3
17.2	20.95	54.8	47.99	76.1	60.53	31.5	41.45	82.9	47.24	21.8
27.1	20.85	54.2	45.91	74.4	60.43	31.3	41.30	81.6	47.13	21.3
Sept. 6.1	20.76	53.7	44.12	72.2	60.34	31.3	41.18	80.0	47.04	20.9
16.1	20.70	53.3	42.68	69.7	60.28	31.5	41.08	78.0	46.97	20.7
26.0	20.67	53.1	41.67	66.9	60.24	31.8	41.01	75.8	46.92	20.6
Oct. 6.0	20.68	53.0	41.13	63.9	60.24	32.4	40.99	73.2	46.91	20.7
16.0	20.73	53.2	41.09	60.8	60.28	33.2	41.01	70.4	46.95	21.0
26.0	20.83	53.6	41.57	57.8	60.36	34.2	41.08	67.3	47.03	21.5
Nov. 4.9	20.97	54.3	42.56	55.0	60.49	35.5	41.21	64.1	47.16	22.3
14.9	21.16	55.2	44.03	52.5	60.66	37.0	41.39	60.9	47.33	23.4
24.9	21.40	56.5	45.94	50.4	60.88	38.8	41.63	57.6	47.55	24.7
Dec. 4.9	21.67	58.0	48.21	48.7	61.14	40.7	41.91	54.5	47.81	26.3
14.8	21.97	59.7	50.77	47.6	61.44	42.8	42.24	51.5	48.10	28.1
24.8	22.30	61.6	53.54	47.2	61.75	44.9	42.60	48.8	48.42	30.0
34.8	22.63	63.6	56.42	47.3	62.08	47.1	42.98	46.5	48.75	32.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Ursa Majoris.			η Bootis.			θ Apodis.			β Centauri.			π Hydræ.		
	Right Ascension.	Declination North.		Right Ascension.	Declination North.		Right Ascension.	Declination South.		Right Ascension.	Declination South.		Right Ascension.	Declination South.	
	h m	°	'	h m	°	'	h m	°	'	h m	°	'	h m	°	'
	13 43	+49 45		13 50	+18 51		13 56	-76 20		13 57	-59 55		14 1	-26 14	
	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
Jan 0.8	55.44	71.2		16.81	30.6		16.91	45.7		17.36	23.2		6.18	8.0	
10.8	55.47	69.2	2.0	17.14	28.4	2.2	17.99	46.0	0.3	17.92	23.9	0.7	6.53	9.6	1.6
20.8	54.51	67.7	1.5	17.48	26.4	2.0	19.07	46.9	0.9	18.48	25.1	1.2	6.89	11.3	1.7
30.7	54.75	66.8	0.9	17.81	24.8	1.6	20.13	48.3	1.4	19.03	26.8	1.7	7.23	13.2	1.9
Feb. 0.7	55.17	66.5	0.3	18.12	23.6	1.2	21.14	50.2	1.9	19.55	28.9	2.1	7.56	15.2	2.0
			0.3			0.8			2.4			2.3			
10.7	55.55	66.8		18.40	22.8		22.09	52.6		20.04	31.2		7.87	17.2	
			0.9			0.3			2.7			2.7			2.0
20.6	55.80	67.7	0.9	18.66	22.5	0.3	22.94	55.3	3.1	20.47	33.9	2.8	8.14	19.2	1.8
30.6	56.18	69.1	1.4	18.88	22.6	0.1	23.68	58.4	3.3	20.86	36.7	3.0	8.39	21.0	1.8
Mar. 10.6	56.41	71.0	1.9	19.07	23.1	0.5	24.31	61.7	3.4	21.18	39.7	3.1	8.60	22.8	1.6
			2.2			0.8			3.4			3.1			1.6
30.6	56.59	73.2	2.5	19.22	23.9	1.1	24.81	65.1	3.5	21.45	42.8	3.0	8.77	24.4	1.5
			2.5			1.1			3.5			3.0			1.5
Apr. 0.5	56.71	75.7		19.33	25.0		25.18	68.6		21.65	45.8		8.91	25.9	
			0.7			1.1			0.23			3.0			1.3
10.5	56.78	78.3	2.6	19.41	26.3	1.3	25.41	72.1	3.5	21.80	48.8	2.9	9.01	27.2	1.2
20.5	56.70	81.0	2.7	19.46	27.7	1.4	25.52	75.6	3.5	21.88	51.7	2.7	9.09	28.4	1.0
May 0.5	56.75	83.6	2.5	19.47	29.2	1.5	25.49	78.9	3.1	21.91	54.4	2.5	9.13	29.4	0.8
			2.2			1.5			3.1			2.5			0.8
10.4	56.67	86.1	2.8	19.46	30.7	1.5	25.33	82.0	2.9	21.88	56.9	2.3	9.15	30.2	0.6
			2.8			1.5			2.9			2.3			0.6
Jun. 0.4	56.55	88.3		19.43	32.2		25.04	84.9		21.79	59.2		9.13	30.8	
			1.0			1.4			0.41			2.0			0.5
10.4	56.50	90.2	1.9	19.37	33.6	1.4	24.63	87.4	2.5	21.65	61.2	1.6	9.09	31.3	0.5
20.4	56.41	91.8	1.6	19.29	34.8	1.2	24.12	89.5	2.1	21.46	62.8	1.2	9.03	31.6	0.3
30.4	56.02	93.0	0.7	19.19	35.8	0.8	23.51	91.3	1.2	21.23	64.0	0.8	8.94	31.7	0.1
July 0.1	55.70	93.7	0.2	19.08	36.6	0.6	22.82	92.5	0.7	20.96	64.8	0.3	8.83	31.6	0.3
			0.2			0.6			0.7			0.3			0.3
10.3	55.56	93.9	0.2	18.96	37.2	0.3	22.08	93.2	0.2	20.66	65.1	0.1	8.71	31.3	0.4
20.3	55.52	93.7	0.2	18.83	37.5	0.1	21.30	93.4	0.2	20.34	65.0	0.5	8.57	30.9	0.6
30.3	55.00	93.0	1.1	18.60	37.6	0.2	20.51	93.0	0.4	20.02	64.5	1.0	8.42	30.3	0.8
Aug. 7.2	54.86	91.0	1.5	18.56	37.4	0.5	19.73	92.1	1.4	19.69	63.5	1.4	8.27	29.5	0.9
			1.5			0.8			1.4			1.4			0.9
27.2	54.65	90.4	0.0	18.43	36.0	0.8	19.00	90.7	1.8	19.39	62.1	1.7	8.13	28.6	0.9
			0.0			0.8			1.8			1.7			0.9
Sept 6.1	54.46	88.4		18.32	36.1		18.35	88.9		19.11	60.4		8.00	27.7	
			0.4			1.0			0.55			2.0			1.0
16.1	54.31	86.0	0.7	18.23	35.1	1.3	17.80	86.7	2.2	18.88	58.4	2.2	7.90	26.7	1.0
26.1	54.10	83.3	1.0	18.17	33.8	1.6	17.39	84.1	2.7	18.72	56.2	2.4	7.82	25.7	0.9
Oct 0.0	54.12	80.3	1.3	18.14	32.2	1.9	17.13	81.4	2.9	18.62	53.8	2.4	7.79	24.8	0.7
			1.3			2.1			2.9			2.4			0.7
10.0	54.11	77.0	3.4	18.15	30.3	2.1	17.04	78.5	2.9	18.61	51.4	2.3	7.80	24.1	0.6
			3.4			2.1			2.9			2.3			0.6
Nov. 0.0	54.16	73.6		18.21	28.2		17.13	75.6		18.68	49.1		7.85	23.5	
			1.6			0.4			0.2			2.1			0.3
10.0	54.27	70.0	1.6	18.31	25.8	0.5	17.41	72.9	2.5	18.85	47.0	1.9	7.97	23.2	0.1
20.0	54.45	66.4	0.8	18.46	23.3	0.8	17.57	70.4	2.1	19.11	45.1	1.5	8.14	23.1	0.2
30.0	54.60	62.8	0.4	18.66	20.7	1.2	18.50	68.3	1.7	19.45	43.6	1.1	8.35	23.3	0.6
Dec. 4.0	54.60	59.4	0.1	18.91	18.0	1.7	18.28	66.6	1.2	19.87	42.5	0.6	8.62	23.9	0.9
			0.1			1.7			1.2			0.6			0.9
14.8	55.35	56.1	0.3	19.10	15.3	2.6	20.18	65.4	0.0	20.35	41.9	0.1	8.02	24.8	1.2
24.8	55.75	53.5	0.4	19.50	12.7	2.6	21.18	64.8	0.1	20.80	41.5	0.1	8.26	26.0	1.2
34.8	56.10	51.1	0.4	20.53	10.3	2.4	22.24	64.7	0.1	21.43	42.3	0.5	8.61	27.5	1.5

FIXED STARS, 1908.

367

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Draconis.		δ Bootis.		κ Virginis.		ζ Ursæ Minoris.		α Bootis. (Arcturus.)	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 14 1	° ' " +64 48	h m 14 6	° ' " +25 31	h m 14 7	° ' " - 9 50	h m 14 9	° ' " +77 58	h m 14 11	° ' " +19 39
Jan. 0.8	51.89	44.6	10.78	35.3	57.63	36.0	8.39	35.5	26.32	39.3
10.8	52.48	42.6	11.12	33.0	57.96	37.9	9.45	33.6	26.65	36.9
20.8	53.09	41.2	11.46	31.0	58.29	39.8	10.58	32.4	26.98	34.8
30.7	53.70	40.4	11.80	29.4	58.61	41.7	11.73	31.8	27.31	33.1
Feb. 9.7	54.29	40.3	12.13	28.3	58.92	43.5	12.87	31.9	27.63	31.8
19.7	54.85	40.8	12.43	27.7	59.21	45.1	13.94	32.6	27.92	30.9
29.7	55.36	42.0	12.71	27.6	59.47	46.5	14.92	34.0	28.19	30.5
Mar. 10.6	55.80	43.7	12.95	27.9	59.70	47.7	15.77	35.9	28.43	30.5
20.6	56.16	45.9	13.16	28.7	59.90	48.6	16.47	38.3	28.63	30.9
30.6	56.43	48.5	13.33	29.8	60.06	49.4	17.00	41.0	28.80	31.7
Apr. 9.5	56.62	51.3	13.46	31.2	60.20	49.9	17.35	44.0	28.93	32.8
19.5	56.71	54.3	13.55	32.9	60.30	50.2	17.50	47.1	29.03	34.1
29.5	56.72	57.3	13.61	34.7	60.38	50.4	17.47	50.2	29.09	35.5
May 9.5	56.65	60.3	13.64	36.5	60.43	50.4	17.26	53.2	29.12	37.1
19.4	56.51	63.0	13.63	38.4	60.45	50.3	16.89	56.0	29.13	38.7
29.4	56.29	65.5	13.60	40.1	60.44	50.1	16.37	58.4	29.11	40.2
June 8.4	56.02	67.6	13.54	41.8	60.41	49.8	15.71	60.5	29.06	41.6
18.4	55.70	69.3	13.46	43.2	60.36	49.4	14.95	62.2	28.99	42.9
28.3	55.34	70.6	13.36	44.4	60.29	49.0	14.11	63.3	28.90	44.0
July 8.3	54.95	71.3	13.24	45.4	60.20	48.5	13.20	64.0	28.79	44.9
18.3	54.54	71.6	13.11	46.1	60.09	48.0	12.25	64.1	28.66	45.6
28.2	54.12	71.3	12.96	46.5	59.97	47.5	11.28	63.7	28.52	46.0
Aug 7.2	53.70	70.5	12.81	46.5	59.84	47.0	10.32	62.7	28.38	46.1
17.2	53.29	69.2	12.66	46.2	59.71	46.5	9.39	61.2	28.24	45.9
27.2	52.91	67.4	12.51	45.6	59.59	46.1	8.51	59.2	28.10	45.4
Sept. 6.1	52.56	65.2	12.38	44.7	59.47	45.7	7.71	56.8	27.97	44.7
16.1	52.26	62.5	12.27	43.4	59.37	45.4	6.99	54.0	27.85	43.6
26.1	52.01	59.5	12.18	41.8	59.30	45.2	6.39	50.8	27.77	42.3
Oct. 6.1	51.83	56.2	12.13	39.9	59.26	45.2	5.93	47.3	27.71	40.6
16.0	51.73	52.6	12.12	37.7	59.27	45.4	5.61	43.6	27.70	38.7
26.0	51.72	48.8	12.15	35.3	59.32	45.8	5.46	39.7	27.73	36.5
Nov. 5.0	51.79	44.9	12.24	32.6	59.41	46.4	5.49	35.8	27.81	34.1
14.9	51.96	41.0	12.38	29.8	59.56	47.3	5.70	31.9	27.94	31.5
24.9	52.23	37.3	12.56	26.9	59.75	48.5	6.10	28.1	28.12	28.8
Dec. 4.9	52.59	33.7	12.80	23.9	59.99	49.9	6.68	24.6	28.34	26.0
14.9	53.03	30.4	13.07	21.0	60.27	51.5	7.42	21.4	28.60	23.2
24.8	53.54	27.5	13.38	18.2	60.57	53.2	8.31	18.6	28.90	20.5
34.8	54.10	25.1	13.71	15.7	60.89	55.1	9.31	16.3	29.22	18.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Octantis.		λ Bootis.		λ Virginis.		θ Bootis.		ζ Ursæ Minoris.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 14 11	° ' " -83 14	h m 14 12	° ' " +46 30	h m 14 14	° ' " -12 56	h m 14 22	° ' " +52 16	h m 14 27	° ' " +76 5
Jan. 0.8	58.39 s	24.6 "	51.53 s	30.3 "	6.14 s	42.9 "	2.07 s	24.3 "	39.27 s	67.2 "
10.8	60.44 2.05	24.5 0.1	51.93 0.40	27.9 2.4	6.47 -33	44.7 1.8	2.50 -43	21.8 2.5	40.18 0.91	65.1 2.1
20.8	62.53 2.09	25.0 0.5	52.34 0.47	26.1 1.8	6.80 -33	46.5 1.8	2.95 -45	20.0 1.8	41.14 0.96	63.5 1.6
30.7	64.61 2.08	26.0 1.0	52.76 0.42	24.8 1.3	7.13 -33	48.4 1.9	3.40 -45	18.7 1.3	42.14 1.00	62.6 0.9
Feb. 9.7	66.62 2.01	27.6 1.6	53.16 0.40	24.2 0.6	7.45 -32	50.1 1.7	3.84 -44	18.0 0.7	43.14 1.00	62.4 0.2
	1.90	2.1	0.38	0.1	0.29	1.7	0.42	0.0	0.96	0.5
19.7	68.52	29.7	53.54	24.1	7.74	51.8	4.26	18.0	44.10	62.9
29.7	70.26 1.74	32.2 2.5	53.88 0.34	24.6 0.5	8.01 -27	53.3 1.5	4.65 -39	18.6 0.6	44.99 0.89	64.0 1.1
Mar. 10.6	71.80 1.54	35.1 2.9	54.19 0.31	25.7 1.1	8.24 -23	54.6 1.3	4.99 -34	19.8 1.2	45.78 0.79	65.7 1.7
20.6	73.13 1.33	38.3 3.2	54.44 0.25	27.3 1.6	8.45 -21	55.7 1.1	5.29 -30	21.5 1.7	46.45 0.67	67.9 2.2
30.6	74.22 1.09	41.7 3.4	54.65 0.21	29.3 2.0	8.62 -17	56.6 0.9	5.52 -23	23.6 2.1	46.98 0.53	70.5 2.6
	0.83	3.5	0.16	2.3	0.15	0.7	0.18	2.5	0.37	2.8
Apr. 9.5	75.05	45.2	54.81	31.6	8.77	57.3	5.70	26.1	47.35	73.3
19.5	75.61 0.56	48.8 3.6	54.91 0.10	34.2 2.6	8.88 -11	57.8 0.5	5.82 -12	28.8 2.7	47.56 0.21	76.4 3.1
29.5	75.89 0.28	52.4 3.6	54.96 0.05	36.8 2.6	8.96 -08	58.2 0.4	5.88 -06	31.6 2.8	47.62 0.06	79.5 3.1
May 9.5	75.89 0.00	55.9 3.5	54.97 0.01	39.4 2.6	9.02 -06	58.4 0.2	5.89 -01	34.4 2.8	47.51 0.11	82.6 3.1
19.4	75.62 0.27	59.3 3.4	54.93 0.04	42.0 2.6	9.05 -03	58.4 0.0	5.85 -04	37.1 2.7	47.26 0.25	85.5 2.9
	0.54	3.2	0.07	2.4	0.00	0.0	0.09	2.5	0.39	2.6
29.4	75.08	62.5	54.86	44.4	9.05	58.4	5.76	39.6	46.87	88.1
June 8.4	74.28 0.80	65.3 2.8	54.74 0.12	46.5 2.1	9.02 -03	58.2 0.2	5.62 -14	41.9 2.3	46.37 0.50	90.4 2.3
18.4	73.25 1.03	67.8 2.5	54.60 0.14	48.3 1.8	8.97 -05	57.9 0.3	5.45 -17	43.8 1.9	45.76 0.61	92.3 1.9
28.3	72.01 1.24	69.8 2.0	54.42 0.18	49.8 1.5	8.90 -07	57.6 0.3	5.24 -21	45.3 1.5	45.06 0.70	93.8 1.5
July 8.3	70.59 1.42	71.4 1.6	54.23 0.19	50.9 1.1	8.81 -09	57.2 0.4	5.01 -23	46.4 1.1	44.30 0.76	94.7 0.9
	1.55	1.1	0.21	0.6	0.11	0.4	0.25	0.7	0.81	0.3
18.3	69.04	72.5	54.02	51.5	8.70	56.8	4.76	47.1	43.49	95.0
28.3	67.39 1.65	73.0 0.5	53.79 0.23	51.6 0.1	8.58 -12	56.3 0.5	4.49 -27	47.2 0.1	42.66 0.83	94.9 0.1
Aug. 7.2	65.71 1.68	73.0 0.0	53.56 0.23	51.3 0.3	8.45 -13	55.8 0.5	4.22 -27	46.9 0.3	41.81 0.85	94.2 0.7
17.2	64.05 1.66	72.4 0.6	53.33 0.23	50.6 0.7	8.32 -13	55.3 0.5	3.94 -28	46.1 0.8	40.98 0.83	93.0 1.2
27.2	62.47 1.58	71.2 1.2	53.12 0.21	49.4 1.2	8.18 -14	54.8 0.5	3.68 -26	44.9 1.2	40.18 0.80	91.3 1.7
	1.44	1.6	0.21	1.6	0.12	0.5	0.25	1.7	0.74	2.1
Sept. 6.1	61.03	69.6	52.91	47.8	8.06	54.3	3.43	43.2	39.44	89.2
16.1	59.79 1.24	67.5 2.1	52.73 0.18	45.8 2.0	7.96 -10	53.9 0.4	3.21 -22	41.0 2.2	38.76 0.68	86.6 2.6
26.1	58.80 0.99	65.0 2.5	52.59 0.14	43.4 2.4	7.88 -08	53.6 0.3	3.03 -18	38.4 2.6	38.18 0.55	83.6 3.0
Oct. 6.1	58.11 0.69	62.2 2.8	52.49 0.10	40.6 2.8	7.84 -04	53.4 0.2	2.89 -14	35.5 2.9	37.71 0.47	80.2 3.4
16.0	57.75 0.36	59.3 2.9	52.44 0.05	37.5 3.1	7.84 -00	53.4 0.0	2.81 -08	32.3 3.2	37.36 0.35	76.6 3.6
	0.00	3.0	0.00	3.3	0.04	0.2	0.02	3.4	0.20	3.7
26.0	57.75	56.3	52.44	34.2	7.88	53.6	2.79	28.9	37.16	72.9
Nov. 5.0	58.12 0.37	53.3 3.0	52.51 0.07	30.8 3.4	7.97 -09	54.1 0.5	2.83 -04	25.2 3.7	37.11 0.05	69.0 3.9
15.0	58.85 0.73	50.6 2.7	52.64 0.13	27.2 3.6	8.12 -15	54.8 0.7	2.94 -11	21.5 3.7	37.22 0.11	65.0 4.0
24.9	59.92 1.07	48.1 2.5	52.83 0.19	23.6 3.6	8.31 -19	55.8 1.0	3.13 -19	17.8 3.7	37.50 0.28	61.2 3.8
Dec. 4.9	61.30 1.38	46.0 2.1	53.08 0.25	20.1 3.5	8.54 -23	57.0 1.2	3.38 -25	14.2 3.6	37.94 0.44	57.5 3.7
	1.64	1.6	0.31	3.3	0.28	1.4	0.32	3.4	0.59	3.4
14.9	62.94	44.4	53.39	16.8	8.82	58.4	3.70	10.8	38.53	54.1
24.8	64.79 1.85	43.4 1.0	53.74 0.35	13.8 3.0	9.12 -30	60.0 1.6	4.07 -37	7.6 3.2	39.26 0.73	51.1 3.0
34.8	66.79 2.00	42.9 0.5	54.13 0.39	11.1 2.7	9.44 -32	61.8 1.8	4.48 -41	4.9 2.7	40.10 0.84	48.6 2.5

FIXED STARS, 1908.

369

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ρ Bootis.		α^2 Centauri.		33 Bootis.		α Apodis.		ϵ Bootis.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m 14 27	° ' " -30 46	h m 14 33	° ' " -60 27	h m 14 35	° ' " +44 47	h m 14 36	° ' " -78 38	h m 14 40	° ' " +27 27
Jan. 0.8	50.25	26.2	18.00	0.3	23.03	57.7	18.28	53.7	56.42	39.6
10.8	50.59	23.8	18.55	0.5	23.41	55.2	19.53	53.3	56.75	37.1
20.8	50.94	21.7	19.11	1.2	23.80	53.1	20.82	53.5	57.09	34.9
30.8	51.29	20.0	19.67	2.3	24.21	51.5	22.13	54.3	57.43	33.2
Feb. 9.7	51.63	18.9	20.21	3.9	24.60	50.6	23.41	55.6	57.77	31.9
19.7	51.96	18.3	20.73	5.8	24.98	50.3	24.64	57.4	58.09	31.1
29.7	52.26	18.2	21.21	8.1	25.33	50.6	25.79	59.6	58.39	30.8
Mar. 10.6	52.52	18.7	21.64	10.5	25.65	51.4	26.84	62.2	58.66	31.1
20.6	52.75	19.6	22.02	13.2	25.92	52.8	27.76	65.1	58.90	31.8
30.6	52.95	20.9	22.35	16.0	26.15	54.6	28.55	68.3	59.10	32.9
Apr. 9.6	53.10	22.5	22.62	18.8	26.33	56.8	29.20	71.6	59.26	34.4
19.5	53.22	24.4	22.83	21.7	26.46	59.3	29.69	75.0	59.39	36.1
29.5	53.30	26.5	22.98	24.5	26.54	61.8	30.02	78.4	59.49	38.0
May 9.5	53.34	28.6	23.07	27.3	26.58	64.5	30.18	81.8	59.55	40.1
19.5	53.35	30.8	23.10	29.8	26.58	67.1	30.18	85.1	59.57	42.1
29.4	53.33	32.9	23.07	32.2	26.53	69.6	30.02	88.2	59.57	44.1
June 8.4	53.28	34.8	22.97	34.4	26.44	71.8	29.69	91.1	59.53	46.0
18.4	53.20	36.5	22.82	36.2	26.32	73.8	29.21	93.6	59.47	47.7
28.3	53.10	37.9	22.62	37.8	26.17	75.5	28.60	95.8	59.38	49.2
July 8.3	52.97	39.1	22.36	38.9	25.99	76.8	27.86	97.5	59.26	50.4
18.3	52.82	39.9	22.07	39.6	25.79	77.6	27.02	98.8	59.13	51.3
28.3	52.66	40.4	21.75	39.9	25.57	78.0	26.11	99.5	58.98	51.9
Aug. 7.2	52.49	40.5	21.40	39.8	25.35	78.0	25.15	99.7	58.82	52.2
17.2	52.32	40.2	21.04	39.2	25.12	77.6	24.18	99.4	58.65	52.1
27.2	52.15	39.6	20.69	38.2	24.89	76.6	23.23	98.5	58.48	51.6
Sept. 6.2	51.99	38.6	20.37	36.8	24.67	75.3	22.34	97.1	58.32	50.8
16.1	51.85	37.2	20.08	35.1	24.48	73.5	21.55	95.3	58.17	49.7
26.1	51.73	35.5	19.84	33.1	24.31	71.3	20.89	93.0	58.05	48.2
Oct. 6.1	51.65	33.5	19.66	30.9	24.19	68.7	20.40	90.5	57.96	46.3
16.0	51.61	31.1	19.57	28.6	24.11	65.8	20.11	87.7	57.91	44.1
26.0	51.61	28.5	19.57	26.2	24.08	62.7	20.03	84.8	57.90	41.7
Nov. 5.0	51.67	25.6	19.66	24.0	24.12	59.3	20.17	81.9	57.94	39.0
15.0	51.78	22.6	19.84	21.9	24.21	55.7	20.53	79.2	58.04	36.1
24.9	51.94	19.5	20.12	20.1	24.37	52.2	21.11	76.7	58.19	33.1
Dec. 4.9	52.16	16.3	20.48	18.7	24.59	48.6	21.89	74.5	58.39	30.1
14.9	52.41	13.2	20.91	17.7	24.87	45.2	22.85	72.8	58.63	27.1
24.9	52.71	10.3	21.40	17.1	25.19	42.0	23.95	71.6	58.92	24.1
34.8	53.04	7.6	21.93	17.1	25.55	39.2	25.16	70.9	59.23	21.4

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Libræ.			β Ursæ Minoris.			β Bootis.			γ Scorpii.			δ Bootis.		
	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion North.
	h	m	°	h	m	°	h	m	°	h	m	°	h	m	°
	14	45	-15 39	14	50	+74 31	14	58	+40 44	14	58	-24 55	15	11	+33 39
Jan. 0.8	45.38		25.4	54.67		43.2	26.94		65.8	39.01		2.3	45.73		23.9
10.8	45.70	.32	27.0	55.44	.77	40.8	27.29	.35	63.1	39.35	.34	3.5	46.05	.32	21.2
20.8	46.03	.33	28.6	56.28	.84	38.9	27.66	.37	60.8	39.69	.34	4.9	46.39	.34	18.8
30.8	46.37	.34	30.3	57.17	.89	37.7	28.03	.37	59.0	40.04	.35	6.4	46.74	.35	16.9
Feb. 9.7	46.69	.32	32.0	58.08	.91	37.1	28.41	.38	57.8	40.39	.35	8.0	47.09	.35	15.4
		.31	1.6		.89	0.1		.36			.32	1.6		.34	0.9
19.7	47.00		33.6	58.97		37.2	28.77		57.2	40.71		9.6	47.43		14.6
29.7	47.29	.29	35.1	59.81	.84	38.0	29.12	.35	57.1	41.02	.31	11.2	47.76	.33	14.3
Mar. 10.7	47.55	.26	36.4	60.57	.76	39.4	29.43	.31	57.7	41.31	.29	12.7	48.06	.30	14.5
20.6	47.78	.23	37.5	61.23	.66	41.4	29.71	.28	58.8	41.56	.25	14.1	48.33	.27	15.3
30.6	47.99	.21	38.5	61.78	.55	43.8	29.95	.24	60.4	41.79	.23	15.4	48.57	.24	16.5
		.17	0.7		.41	2.7		.20			.20	1.2		.20	1.7
Apr. 9.6	48.16		39.2	62.19		46.5	30.15		62.3	41.99		16.6	48.77		16.2
19.5	48.31	.15	39.8	62.46	.27	49.5	30.31	.16	64.6	42.16	.17	17.7	48.94	.17	20.2
29.5	48.42	.11	40.3	62.59	.13	52.6	30.42	.11	67.0	42.30	.14	18.7	49.06	.12	22.4
May 9.5	48.51	.09	40.6	62.58	.01	55.8	30.49	.07	69.6	42.40	.10	19.5	49.15	.09	24.7
19.5	48.57	.06	40.7	62.44	.14	58.8	30.52	.03	72.2	42.48	.07	20.2	49.20	.05	27.1
		.03	0.1		.28	2.8		.01			.04	0.6		.02	2.3
29.4	48.60		40.8	62.16		61.6	30.51		74.7	42.52		20.8	49.22		29.4
June 8.4	48.60	.00	40.8	61.77	.39	64.1	30.46	.05	77.0	42.54	.02	21.3	49.20	.02	31.6
18.4	48.58	.02	40.7	61.28	.49	66.2	30.37	.09	79.1	42.52	.02	21.6	49.14	.06	33.7
28.4	48.53	.05	40.5	60.70	.58	68.0	30.25	.12	81.0	42.47	.05	21.8	49.05	.11	35.5
July 8.3	48.45	.08	40.3	60.04	.69	69.2	30.10	.15	82.4	42.39	.08	21.9	48.94	.14	37.0
		.10	0.3		.71	0.7		.17			.10	0.0		.14	1.2
18.3	48.35	.12	40.0	59.33	.75	70.2	29.93	.20	84.2	42.29	.13	21.9	48.80	.17	38.2
28.3	48.23	.14	39.6	58.58	.76	69.9	29.73	.21	84.5	42.16	.14	21.7	48.63	.18	39.0
Aug. 7.2	48.09	.14	39.2	57.82	.78	69.0	29.52	.22	84.3	42.02	.16	21.4	48.45	.20	39.5
17.2	47.95	.15	38.8	57.04	.75	67.7	29.30	.22	83.7	41.86	.16	21.0	48.25	.19	39.5
27.2	47.80	.14	38.3	56.29	.72	65.8	29.08	.21		41.70	.16	20.5	48.06	.20	39.2
			0.5			1.9						0.6			0.8
Sept. 6.2	47.66		37.8	55.57		63.5	28.87		82.7	41.54		19.9	47.86		38.4
16.1	47.54	.12	37.4	54.90	.67	60.7	28.67	.20	81.2	41.40	.14	19.2	47.68	.18	37.3
26.1	47.43	.11	37.0	54.31	.59	57.6	28.49	.18	79.3	41.28	.12	18.4	47.51	.17	35.7
Oct. 6.1	47.36	.07	36.7	53.80	.51	54.2	28.35	.14	77.0	41.19	.09	17.7	47.38	.13	33.5
16.1	47.33	.03	36.6	53.41	.47	50.5	28.25	.10	74.4	41.14	.05	17.1	47.28	.05	31.5
		.01	0.0			3.7		.05			.00	0.5			2.6
26.0	47.34		36.6	53.14		46.7	28.20		71.5	41.14		16.6	47.23		28.9
Nov. 5.0	47.40	.06	36.8	53.01	.13	42.8	28.21	.01	68.3	41.19	.05	16.2	47.23	.00	26.1
15.0	47.51	.11	37.3	53.03	.02	38.9	28.28	.07	65.0	41.30	.11	16.1	47.29	.06	23.0
24.9	47.68	.17	38.0	53.20	.17	35.1	28.40	.12	61.5	41.46	.21	16.2	47.40	.16	19.4
Dec. 4.9	47.89	.26	38.9	53.51	.47	31.5	28.59	.24	58.0	41.67	.26	16.5	47.56	.22	16.5
			1.2			3.6						0.6			1.1
14.9	48.15	.29	40.1	53.98	.60	28.3	28.83	.28	54.6	41.93	.29	17.1	47.78	.26	13.2
24.9	48.44	.31	41.5	54.58	.71	25.5	29.11	.33	51.4	42.22	.33	18.0	48.04	.30	10.0
34.8	48.75		43.0	55.29			29.44		48.4	42.55		19.1	48.34		7.7

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

371

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Libræ.			γ^2 Ursæ Minoris.			μ^1 Bootis.			ρ Octantis.			β Coronæ Borealis.		
	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion North.
	h m	s	°	h m	s	°	h m	s	°	h m	s	°	h m	s	°
	15 12		— 9 2	15 20		+72 9	15 20		+37 41	15 21		—84 9	15 24		+29 25
Jan. 0.9	1.37		30.4	48.86		32.1	58.93		53.8	44.89		15.6	0.24		18.4
10.8	1.67	.30	32.1	49.49	.63	29.3	59.25	.32	51.0	47.09	2.20	14.4	0.54	.30	15.7
20.8	1.99	.32	33.8	50.19	.70	27.0	59.59	.34	48.6	49.45	2.36	13.8	0.86	.32	13.3
30.8	2.31	.32	35.5	50.94	.79	25.4	59.95	.36	46.6	51.92	2.47	13.8	1.19	.33	11.2
Feb. 9.8	2.63	.31	37.1	51.73	.79	24.4	60.31	.35	45.1	54.42	2.48	14.3	1.53	.33	9.7
19.7	2.94	.29	38.5	52.52	.76	24.0	60.66	.34	44.3	56.90	2.40	15.3	1.86	.32	8.7
29.7	3.23	.27	39.7	53.28	.71	24.4	61.00	.32	44.0	59.30	2.26	16.8	2.18	.30	8.2
Mar. 10.7	3.50	.25	40.7	53.99	.65	25.4	61.32	.29	44.3	61.56	2.09	18.8	2.48	.27	8.3
20.6	3.75	.22	41.5	54.63	.54	27.0	61.61	.25	45.1	63.65	1.87	21.1	2.75	.24	8.9
30.6	3.97	.19	42.1	55.18	.44	29.1	61.86	.22	46.5	65.52	1.62	23.8	2.99	.21	9.9
Apr. 9.6	4.16	.17	42.4	55.62	.33	31.6	62.08	.18	48.2	67.14	1.34	26.8	3.20	.17	11.3
19.6	4.33	.14	42.6	55.95	.21	34.5	62.26	.14	50.3	68.48	1.04	30.0	3.37	.14	13.1
29.5	4.47	.11	42.6	56.16	.09	37.5	62.40	.09	52.7	69.52	0.72	33.4	3.51	.10	15.1
May 9.5	4.58	.08	42.4	56.25	.03	40.7	62.49	.06	55.2	70.24	0.38	36.8	3.61	.07	17.3
19.5	4.66	.05	42.2	56.22	.15	43.8	62.55	.02	57.7	70.62	0.05	40.2	3.68	.03	19.6
29.5	4.71	.02	41.8	56.07	.26	46.8	62.57	.02	60.2	70.67	0.29	43.5	3.71	.00	21.8
June 8.4	4.73	.00	41.4	55.81	.35	49.6	62.55	.06	62.6	70.38	0.63	46.7	3.71	.04	24.0
18.4	4.73	.04	41.0	55.46	.52	52.0	62.49	.09	64.8	69.75	0.94	49.7	3.67	.07	26.0
28.4	4.69	.06	40.6	55.01	.52	54.1	62.40	.13	66.8	68.81	1.23	52.4	3.60	.10	27.8
July 8.3	4.63	.09	40.1	54.49	.59	55.7	62.27	.15	68.5	67.58	1.48	54.7	3.50	.12	29.4
18.3	4.54	.11	39.7	53.90	.63	56.9	62.12	.18	69.8	66.10	1.69	56.6	3.38	.15	30.6
28.3	4.43	.13	39.3	53.27	.67	57.6	61.94	.20	70.7	64.41	1.84	58.0	3.23	.17	31.5
Aug. 7.3	4.30	.15	38.9	52.60	.68	57.8	61.74	.21	71.2	62.57	1.93	58.9	3.06	.18	32.1
17.2	4.16	.14	38.5	51.92	.69	57.4	61.53	.22	71.3	60.64	1.96	59.3	2.88	.19	32.3
27.2	4.01	.14	38.2	51.23	.67	56.5	61.31	.22	71.0	58.68	1.91	59.0	2.69	.19	32.1
Sept. 6.2	3.87	.14	37.9	50.56	.64	55.1	61.09	.20	70.2	56.77	1.79	58.2	2.50	.19	31.6
16.2	3.73	.12	37.8	49.92	.58	53.2	60.89	.18	69.0	54.98	1.58	56.9	2.31	.16	30.7
26.1	3.61	.09	37.7	49.34	.51	50.8	60.71	.16	67.4	53.40	1.32	55.1	2.15	.13	29.4
Oct. 6.1	3.52	.06	37.8	48.83	.43	48.1	60.55	.12	65.4	52.08	0.99	52.8	2.02	.10	27.7
16.1	3.46	.01	38.0	48.40	.32	44.9	60.43	.07	63.1	51.09	0.61	50.2	1.92	.06	25.6
26.0	3.45	.03	38.4	48.08	.21	41.5	60.36	.02	60.4	50.48	0.21	47.4	1.86	.01	23.3
Nov. 5.0	3.48	.08	39.0	47.87	.08	37.8	60.34	.04	57.4	50.27	0.23	44.4	1.85	.04	20.6
15.0	3.56	.14	39.8	47.79	.05	33.9	60.38	.10	54.2	50.50	0.66	41.4	1.89	.10	17.8
25.0	3.70	.18	40.8	47.85	.06	30.0	60.48	.15	50.8	51.16	1.08	38.5	1.99	.15	14.7
Dec. 4.9	3.88	.22	42.0	48.04	.33	26.1	60.63	.21	47.4	52.24	1.46	35.8	2.14	.20	11.6
14.9	4.10	.27	43.5	48.37	.45	22.4	60.84	.26	44.0	53.70	1.78	33.5	2.34	.25	8.4
24.9	4.37	.29	45.0	48.82	.56	19.0	61.10	.30	40.7	55.48	2.07	31.6	2.59	.29	5.4
34.9	4.66		46.7	49.38		15.8	61.40		37.7	57.55		30.1	2.88		2.5

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	<i>α</i> Coronæ Borealis.			<i>α</i> Serpentis.			<i>ε</i> Serpentis.			<i>ζ</i> Ursæ Minoris.			<i>ε</i> Coronæ Borealis.		
	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.
	h m	s	° ' "	h m	s	° ' "	h m	s	° ' "	h m	s	° ' "	h m	s	° ' "
	15 30		+27 1	15 39		+6 42	15 46		+4 45	15 47		+78 4	15 53		+27 8
Jan. 0.9	45.60		24.1	42.17		55.6	11.74		18.9	14.94		32.4	44.65		36.3
10.9	45.89	.29	21.4	42.45	.28	53.4	12.02	.28	16.8	15.71	.77	29.5	44.92	.27	33.5
20.8	46.21	.32	19.0	42.74	.29	51.4	12.31	.29	14.8	16.62	.91	27.0	45.22	.30	31.0
30.8	46.54	.33	17.0	43.05	.31	49.5	12.62	.31	13.0	17.64	1.02	25.1	45.54	.32	28.8
Feb. 9.8	46.87	.33	15.4	43.36	.31	47.9	12.93	.31	11.4	18.73	1.09	23.8	45.87	.33	27.1
		.33	1.1		.31	1.3		.30	1.3		1.12			.32	1.2
19.7	47.20	.31	14.3	43.67	.30	46.6	13.23	.30	10.1	19.85	1.11	23.2	46.19	.32	25.9
29.7	47.51	.29	13.7	43.97	.28	45.7	13.53	.28	9.2	20.96	1.07	23.3	46.51	.30	25.2
Mar. 10.7	47.80	.28	13.7	44.25	.26	45.1	13.81	.26	8.5	22.03	.98	24.0	46.81	.29	25.0
20.7	48.08	.24	14.1	44.51	.23	44.9	14.07	.24	8.3	23.01	.86	25.4	47.10	.26	25.4
30.6	48.32	.21	15.0	44.74	.21	45.1	14.31	.22	8.3	23.87	.71	27.3	47.36	.23	26.2
Apr. 9.6	48.53	.18	16.4	44.95	.18	45.5	14.53	.19	8.7	24.58	.56	29.7	47.59	.20	27.5
19.6	48.71	.15	18.0	45.13	.16	46.2	14.72	.16	9.3	25.14	.38	32.4	47.79	.16	29.1
29.6	48.86	.11	19.9	45.29	.13	47.2	14.88	.14	10.2	25.52	.20	35.4	47.95	.14	31.0
May 9.5	48.97	.08	22.0	45.42	.10	48.3	15.02	.10	11.2	25.72	.02	38.5	48.09	.10	33.1
19.5	49.05	.04	24.2	45.52	.07	49.5	15.12	.08	12.3	25.74	.17	41.6	48.19	.06	35.3
			2.2			1.3			1.2			3.1			2.3
29.5	49.09	.01	26.4	45.59	.03	50.8	15.20	.04	13.5	25.57	.33	44.7	48.25	.03	37.6
June 8.4	49.10	.03	28.5	45.62	.01	52.1	15.24	.02	14.7	25.24	.50	47.6	48.28	.00	39.8
18.4	49.07	.06	30.5	45.63	.02	53.3	15.26	.02	15.8	24.74	.65	50.2	48.28	.05	41.9
28.4	49.01	.09	32.3	45.61	.06	54.4	15.24	.05	16.9	24.09	.77	52.5	48.23	.07	43.8
July 8.4	48.92	.11	33.8	45.55	.08	55.5	15.19	.08	17.9	23.32	.88	54.4	48.16	.11	45.5
			1.3			0.9			0.9			1.4			1.4
18.3	48.81	.15	35.1	45.47	.11	56.4	15.11	.10	18.8	22.44	.97	55.8	48.05	.13	46.9
28.3	48.66	.16	36.0	45.36	.12	57.1	15.01	.13	19.5	21.47	1.03	56.8	47.92	.16	48.0
Aug. 7.3	48.50	.18	36.6	45.24	.15	57.7	14.88	.14	20.1	20.44	1.07	57.2	47.76	.18	48.9
17.3	48.32	.18	36.9	45.09	.15	58.0	14.74	.15	20.5	19.37	1.09	57.2	47.58	.19	49.3
27.2	48.14	.18	36.8	44.94	.16	58.2	14.59	.16	20.7	18.28	1.08	56.6	47.39	.19	49.4
			0.4			0.0			0.0			1.1			0.3
Sept. 6.2	47.96	.18	36.4	44.78	.15	58.2	14.43	.15	20.7	17.20	1.04	55.5	47.20	.19	49.1
16.2	47.78	.16	35.5	44.63	.14	57.9	14.28	.14	20.5	16.16	.98	53.9	47.01	.18	48.4
26.1	47.62	.14	34.3	44.49	.12	57.4	14.14	.12	20.1	15.18	.89	51.8	46.83	.16	47.4
Oct. 6.1	47.48	.10	32.8	44.37	.08	56.7	14.02	.09	19.5	14.29	.77	49.3	46.67	.12	46.0
16.1	47.38	.06	30.9	44.29	.05	55.8	13.93	.05	18.6	13.52	.64	46.4	46.55	.08	44.2
			2.3			1.2			1.1			3.2			2.1
26.1	47.32	.02	28.6	44.24	.00	54.6	13.88	.01	17.5	12.88	.48	43.2	46.47	.04	42.1
Nov. 5.0	47.30	.04	26.1	44.24	.05	53.1	13.87	.04	16.2	12.40	.30	39.7	46.43	.01	39.7
15.0	47.34	.10	23.4	44.29	.09	51.4	13.91	.09	14.6	12.10	.10	35.9	46.44	.06	37.0
25.0	47.44	.14	20.5	44.38	.15	49.5	14.00	.14	12.9	12.00	.09	32.1	46.50	.12	34.2
Dec. 5.0	47.58	.20	17.4	44.53	.19	47.5	14.14	.19	10.9	12.09	.29	28.3	46.62	.17	31.1
			3.1			2.2			2.0			3.8			3.0
14.9	47.78	.24	14.3	44.72	.23	45.3	14.33	.23	8.9	12.38	.49	24.5	46.79	.22	28.1
24.9	48.02	.27	11.3	44.95	.27	43.1	14.56	.26	6.7	12.87	.67	21.0	47.01	.26	25.0
34.9	48.29		8.4	45.22		40.8	14.82		4.6	13.54		17.8	47.27		22.1

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

373

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Scorpii.		β^1 Scorpii.		ϕ Herculis.		Groombridge 2320.		δ^1 Apodis.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 15 54	° -22 21	h m 16 0	° -19 33	h m 16 5	° +45 10	h m 16 6	° +68 2	h m 16 6	° -78 27
	s	"	s	"	s	"	s	"	s	"
Jan. 0.9	51.22	27.9	2.86	6.2	50.02	28.6	0.95	62.0	26.26	37.3
10.9	51.51 .29	28.8 .09	3.16 .30	7.2 1.0	50.32 .30	25.5 3.1	1.39 .44	58.8 3.2	27.32 1.06	35.7 1.6
20.8	51.83 .32	29.9 1.1	3.47 .31	8.3 1.1	50.65 .33	22.7 2.8	1.91 .52	56.0 2.8	28.50 1.18	34.6 1.1
30.8	52.17 .34	31.1 1.2	3.79 .32	9.5 1.2	51.01 .36	20.3 2.4	2.49 .58	53.8 2.2	29.76 1.26	34.0 0.6
Feb. 9.8	52.50 .33	32.3 1.2	4.12 .33	10.7 1.2	51.39 .38	18.5 1.8	3.11 .62	52.2 1.6	31.08 1.32	33.9 0.1
	52.50 .34	32.3 1.2	4.12 .33	10.7 1.2	51.39 .38	18.5 1.2	3.11 .65	52.2 1.0	31.08 1.33	33.9 0.4
19.8	52.84 .32	33.5 1.2	4.45 .32	11.9 1.1	51.77 .38	17.3 0.5	3.76 .65	51.2 0.3	32.41 1.32	34.3 0.9
29.8	53.16 .31	34.7 1.1	4.77 .30	13.0 1.1	52.15 .36	16.8 0.0	4.41 .62	50.9 0.3	33.73 1.28	35.2 1.3
Mar. 10.7	53.47 .29	35.8 1.0	5.07 .29	14.1 0.9	52.51 .34	16.8 0.7	5.03 .59	51.3 1.0	35.01 1.22	36.5 1.7
20.7	53.76 .27	36.8 0.9	5.36 .27	15.0 0.8	52.85 .32	17.5 1.3	5.62 .53	52.3 1.6	36.23 1.14	38.2 2.1
30.6	54.03 .24	37.7 0.8	5.63 .24	15.8 0.6	53.17 .28	18.8 1.7	6.15 .46	53.9 2.2	37.37 1.03	40.3 2.4
Apr. 9.6	54.27 .22	38.5 0.7	5.87 .22	16.4 0.6	53.45 .24	20.5 2.2	6.61 .38	56.1 2.5	38.40 0.91	42.7 2.6
19.6	54.49 .19	39.2 0.6	6.09 .20	17.0 0.4	53.69 .20	22.7 2.5	6.99 .29	58.6 2.9	39.31 0.77	45.3 2.9
29.6	54.68 .17	39.8 0.5	6.29 .16	17.4 0.3	53.89 .15	25.2 2.7	7.28 .19	61.5 3.1	40.08 0.62	48.2 3.0
May 9.5	54.85 .13	40.3 0.4	6.45 .14	17.7 0.3	54.04 .10	27.9 2.8	7.47 .10	64.6 3.2	40.70 0.46	51.2 3.1
19.5	54.98 .10	40.7 0.4	6.59 .11	18.0 0.2	54.14 .06	30.7 2.9	7.57 .00	67.8 3.1	41.16 0.29	54.3 3.2
29.5	55.08 .07	41.1 0.3	6.70 .07	18.2 0.1	54.20 .01	33.6 2.8	7.57 .10	70.9 3.1	41.45 0.12	57.5 3.1
June 8.5	55.15 .04	41.4 0.2	6.77 .03	18.3 0.1	54.21 .04	36.4 2.6	7.47 .19	74.0 2.8	41.57 0.06	60.6 2.9
18.4	55.19 .01	41.6 0.2	6.80 .01	18.4 0.0	54.17 .08	39.0 2.5	7.28 .27	76.8 2.6	41.51 0.24	63.5 2.8
28.4	55.18 .03	41.8 0.1	6.81 .03	18.4 0.0	54.09 .12	41.5 2.1	7.01 .34	79.4 2.2	41.27 0.41	66.3 2.5
July 8.4	55.15 .07	41.9 0.1	6.78 .07	18.4 0.0	53.97 .17	43.6 1.8	6.67 .42	81.6 1.8	40.86 0.56	68.8 2.2
18.3	55.08 .11	42.0 0.0	6.71 .10	18.4 0.1	53.80 .20	45.4 1.4	6.25 .48	83.4 1.3	40.30 0.70	71.0 1.8
28.3	54.97 .13	42.0 0.1	6.61 .12	18.3 0.2	53.50 .23	46.8 1.0	5.77 .52	84.7 0.9	39.60 0.81	72.8 1.3
Aug. 7.3	54.84 .15	41.9 0.2	6.49 .15	18.1 0.2	53.37 .25	47.8 0.5	5.25 .55	85.6 0.4	38.79 0.90	74.1 0.8
17.3	54.69 .16	41.7 0.3	6.34 .16	17.9 0.2	53.12 .27	48.3 0.0	4.70 .58	86.0 0.2	37.89 0.96	74.9 0.3
27.2	54.53 .17	41.4 0.3	6.18 .17	17.7 0.3	52.85 .27	48.3 0.4	4.12 .58	85.8 0.7	36.93 0.97	75.2 0.2
Sept. 6.2	54.36 .16	41.1 0.4	6.01 .16	17.4 0.3	52.58 .27	47.9 0.9	3.54 .57	85.1 1.2	35.96 0.94	75.0 0.8
16.2	54.20 .16	40.7 0.4	5.85 .15	17.1 0.3	52.31 .25	47.0 1.4	2.97 .54	83.9 1.8	35.02 0.89	74.2 1.3
26.2	54.04 .13	40.3 0.4	5.70 .13	16.8 0.3	52.06 .23	45.6 1.8	2.43 .50	82.1 2.2	34.13 0.78	72.9 1.7
Oct. 6.1	53.91 .09	39.9 0.4	5.57 .10	16.5 0.3	51.83 .19	43.8 2.2	1.93 .44	79.9 2.6	33.35 0.63	71.2 2.2
16.1	53.82 .05	39.5 0.3	5.47 .06	16.2 0.1	51.64 .15	41.6 2.6	1.49 .36	77.3 3.0	32.72 0.47	69.0 2.5
26.1	53.77 .01	39.2 0.2	5.41 .01	16.1 0.1	51.49 .10	39.0 3.0	1.13 .28	74.3 3.4	32.25 0.26	66.5 2.7
Nov. 5.0	53.76 .05	39.0 0.1	5.40 .04	16.0 0.1	51.39 .04	36.0 3.3	0.85 .17	70.9 3.6	31.99 0.05	63.8 2.8
15.0	53.81 .10	38.9 0.1	5.44 .10	16.1 0.2	51.35 .03	32.7 3.4	0.68 .06	67.3 3.8	31.94 0.18	61.0 2.9
25.0	53.91 .15	39.0 0.3	5.54 .14	16.3 0.5	51.38 .09	29.3 3.6	0.62 .05	63.5 3.9	32.12 0.40	58.1 2.7
Dec. 5.0	54.06 .21	39.3 0.4	5.68 .20	16.8 0.6	51.47 .15	25.7 3.6	0.67 .17	59.6 3.8	32.52 0.62	55.4 2.5
14.9	54.27 .25	39.7 0.7	5.88 .24	17.4 0.8	51.62 .22	22.1 3.6	0.84 .27	55.8 3.7	33.14 0.21	52.9 2.2
24.9	54.52 .28	40.4 0.9	6.12 .27	18.2 1.0	51.84 .26	18.5 3.3	1.11 .38	52.1 3.5	33.95 0.98	50.7 1.8
34.9	54.80	41.3	6.39	19.2	52.10	15.2	1.49	48.6	34.93	48.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♄ Ophiuchi.			σ Coronæ Borealis.			τ Herculis.			γ Apodis.			η Ursæ Minoris.		
	Right Ascension.	Declina- tion South.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.		Right Ascension.	Declina- tion North.	
	h m s	° ' "		h m s	° ' "		h m s	° ' "		h m s	° ' "		h m s	° ' "	
	16 9	- 3 27		16 11	+34 5		16 16	+46 31		16 19	-78 41		16 20	+75 57	
Jan. 0.9	29.27	.26	23.6	11.85	.27	26.9	56.23	.29	51.4	10.46	14.2	6.50	57.3	.26	57.3
10.9	29.53	.29	25.4	12.12	.30	23.9	56.52	.32	48.2	11.50	12.5	7.06	54.1	.28	54.1
20.9	29.82	.30	27.1	12.42	.32	21.2	56.84	.36	45.3	12.67	11.2	7.76	51.3	.23	51.3
30.8	30.12	.31	28.7	12.74	.34	18.9	57.20	.38	42.9	13.94	10.4	8.57	49.0	.17	49.0
Feb. 9.8	30.43	.31	30.1	13.08	.34	17.1	57.58	.39	41.0	15.27	10.1	9.46	47.3	.11	47.3
19.8	30.74	.30	31.4	13.42	.33	15.8	57.97	.38	39.7	16.63	10.3	10.40	46.2	.04	46.2
29.7	31.04	.29	32.4	13.75	.33	15.0	58.35	.38	39.0	17.98	10.9	11.35	45.8	.03	45.8
Mar. 10.7	31.33	.27	33.1	14.08	.30	14.9	58.73	.35	39.0	19.31	12.0	12.29	46.1	.06	46.1
20.7	31.60	.26	33.6	14.38	.28	15.3	59.08	.33	39.6	20.58	13.5	13.18	47.1	.15	47.1
30.7	31.86	.23	33.8	14.66	.26	16.2	59.41	.30	40.8	21.77	15.4	13.99	48.6	.20	48.6
Apr. 9.6	32.09	.21	33.8	14.92	.22	17.6	59.71	.25	42.5	22.86	17.7	14.70	50.6	.23	50.6
19.6	32.30	.19	33.5	15.14	.19	19.4	59.96	.21	44.7	23.84	20.2	15.28	53.1	.29	53.1
29.6	32.49	.16	33.0	15.33	.15	21.6	60.17	.17	47.2	24.69	23.0	15.73	56.0	.30	56.0
May 9.5	32.65	.13	31.7	15.48	.12	23.9	60.34	.12	49.9	25.38	25.9	16.03	59.0	.32	59.0
19.5	32.78	.11	31.7	15.60	.07	26.5	60.46	.07	52.8	25.91	29.0	16.17	62.2	.31	62.2
29.5	32.89	.07	30.9	15.67	.04	29.0	60.53	.02	55.7	26.27	32.1	16.16	65.3	.31	65.3
June 8.5	32.96	.04	30.1	15.71	.01	31.5	60.55	.03	58.6	26.45	35.2	16.00	68.4	.29	68.4
18.4	33.00	.00	29.3	15.70	.04	33.9	60.52	.08	61.3	26.45	38.1	15.69	71.3	.27	71.3
28.4	33.00	.03	28.6	15.66	.08	36.1	60.44	.12	63.8	26.26	41.0	15.25	74.0	.23	74.0
July 8.4	32.97	.06	27.9	15.58	.12	38.1	60.32	.16	66.1	25.90	43.6	14.68	76.3	.19	76.3
18.4	32.91	.08	27.2	15.46	.15	39.8	60.16	.20	68.0	25.37	45.8	14.00	78.2	.14	78.2
28.3	32.83	.12	26.7	15.31	.17	41.2	59.96	.24	69.5	24.69	47.7	13.23	79.6	.10	79.6
Aug. 7.3	32.71	.14	26.2	15.14	.20	42.2	59.72	.25	70.6	23.80	49.2	12.39	80.0	.05	80.0
17.3	32.57	.15	25.8	14.94	.21	42.8	59.47	.26	71.2	22.90	50.2	11.49	81.1	.01	81.1
27.3	32.42	.16	25.6	14.73	.23	42.0	59.19	.29	71.4	22.02	50.7	10.55	81.0	.05	81.0
Sept. 6.2	32.26	.16	25.4	14.50	.22	42.7	58.90	.28	71.1	21.03	50.6	9.60	80.5	.11	80.5
16.2	32.10	.15	25.4	14.28	.20	42.0	58.62	.27	70.3	20.05	50.0	8.07	79.4	.16	79.4
26.2	31.95	.13	25.5	14.08	.19	41.0	58.35	.25	69.0	19.12	48.0	7.77	77.8	.20	77.8
Oct. 6.1	31.82	.10	25.8	13.89	.16	39.5	58.10	.21	67.3	18.20	47.3	6.93	75.5	.25	75.5
16.1	31.72	.07	26.3	13.73	.12	37.6	57.80	.17	65.2	17.00	45.2	6.17	73.3	.29	73.3
26.1	31.65	.02	26.0	13.61	.07	35.4	57.72	.12	62.6	17.07	42.8	5.52	72.4	.33	72.4
Nov. 5.1	31.63	.02	27.8	13.54	.02	32.5	57.00	.05	59.7	16.75	40.1	5.00	69.1	.35	69.1
15.0	31.05	.06	28.5	13.52	.04	29.0	57.55	.00	56.4	16.64	37.4	4.62	63.6	.37	63.6
25.0	31.73	.12	30.0	13.50	.09	26.8	57.55	.07	53.0	16.70	34.5	4.40	59.0	.38	59.0
Dec. 5.0	31.85	.17	31.4	13.65	.15	23.6	57.62	.14	49.4	17.11	31.7	4.35	56.1	.38	56.1
14.0	32.02	.21	33.0	13.80	.20	20.2	57.70	.20	45.7	17.00	29.2	4.40	52.3	.37	52.3
24.0	32.23	.25	34.7	14.00	.24	17.0	57.06	.28	42.1	17.40	27.8	4.70	48.0	.35	48.0
34.0	32.40		36.4	14.24		13.5	58.22		38.7	18.41	24.0	5.25	45.7		45.7

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

375

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Draconis.		α Scorpii. (Antares.)		β Herculis.		Λ Draconis.		ζ Ophiuchi.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 16 22	° +61 43	h m 16 23	° -26 13	h m 16 26	° +21 41	h m 16 28	° +68 57	h m 16 32	° -10 22
	s	"	s	"	s	"	s	"	s	"
Jan. 0.9	41.82	14.8	43.43	33.3	13.73	22.1	6.14	56.4	3.24	47.0
10.9	42.16	11.5	43.71	33.9	13.97	19.4	6.54	53.0	3.49	48.3
20.9	42.57	8.5	44.03	34.6	14.24	16.9	7.03	50.1	3.77	49.7
30.8	43.03	6.1	44.35	35.4	14.54	14.7	7.60	47.6	4.07	51.0
Feb. 9.8	43.53	4.2	44.69	36.3	14.85	12.9	8.22	45.7	4.38	52.2
19.8	44.05	2.9	45.04	37.3	15.16	11.5	8.88	44.5	4.69	53.3
29.8	44.58	2.4	45.37	38.2	15.47	10.6	9.54	43.9	5.00	54.3
Mar. 10.7	45.09	2.5	45.70	39.1	15.77	10.2	10.20	44.0	5.30	55.0
20.7	45.58	3.2	46.01	40.0	16.06	10.3	10.83	44.8	5.59	55.6
30.7	46.03	4.6	46.31	40.9	16.33	10.8	11.41	46.2	5.86	55.9
Apr. 9.6	46.43	6.5	46.58	41.6	16.58	11.8	11.92	48.1	6.11	56.1
19.6	46.77	8.9	46.84	42.3	16.80	13.1	12.35	50.5	6.35	56.0
29.6	47.04	11.6	47.06	43.0	16.99	14.8	12.70	53.3	6.56	55.9
May 9.6	47.25	14.6	47.26	43.6	17.16	16.7	12.95	56.3	6.75	55.6
19.5	47.38	17.7	47.43	44.2	17.30	18.7	13.10	59.4	6.90	55.2
29.5	47.43	20.9	47.56	44.7	17.40	20.8	13.15	62.7	7.03	54.7
June 8.5	47.41	24.0	47.66	45.2	17.46	22.9	13.10	65.8	7.13	54.3
18.5	47.32	27.0	47.73	45.6	17.49	25.0	12.95	68.8	7.19	53.8
28.4	47.15	29.7	47.75	46.0	17.49	26.9	12.70	71.5	7.22	53.3
July 8.4	46.92	32.1	47.74	46.3	17.45	28.6	12.37	74.0	7.21	52.9
18.4	46.64	34.1	47.68	46.6	17.37	30.1	11.96	76.0	7.17	52.5
28.3	46.30	35.7	47.59	46.8	17.26	31.4	11.48	77.7	7.09	52.1
Aug. 7.3	45.91	36.8	47.47	46.9	17.12	32.4	10.94	78.8	6.99	51.8
17.3	45.49	37.5	47.32	46.9	16.96	33.1	10.37	79.5	6.85	51.5
27.3	45.05	37.6	47.16	46.8	16.78	33.4	9.76	79.6	6.70	51.3
Sept. 6.2	44.60	37.2	46.98	46.6	16.60	33.4	9.14	79.2	6.54	51.2
16.2	44.15	36.3	46.80	46.3	16.41	33.1	8.52	78.3	6.37	51.1
26.2	43.72	34.9	46.63	45.9	16.22	32.4	7.92	76.9	6.21	51.0
Oct. 6.2	43.32	33.0	46.47	45.5	16.06	31.4	7.36	75.0	6.07	51.1
16.1	42.97	30.6	46.35	45.0	15.92	30.0	6.86	72.6	5.95	51.3
26.1	42.67	27.8	46.27	44.6	15.81	28.3	6.43	69.8	5.87	51.5
Nov. 5.1	42.44	24.7	46.24	44.1	15.75	26.3	6.08	66.7	5.83	52.0
15.0	42.30	21.2	46.26	43.8	15.74	24.0	5.84	63.2	5.84	52.6
25.0	42.24	17.5	46.33	43.6	15.77	21.4	5.71	59.5	5.90	53.3
Dec. 5.0	42.27	13.7	46.46	43.6	15.86	18.7	5.69	55.7	6.00	54.2
15.0	42.39	9.9	46.64	43.7	16.00	15.9	5.80	51.8	6.16	55.3
24.9	42.60	6.1	46.87	44.0	16.18	13.1	6.02	48.1	6.36	56.5
34.9	42.90	2.6	47.14	44.5	16.41	10.3	6.36	44.5	6.60	57.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Triang. Australis.		γ Herculis.		κ Ophiuchi.		ε Ursæ Minoris.		δ Herculis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 16 38	° ' " -68 51	h m 16 39	° ' " +39 5	h m 16 53	° ' " + 9 30	h m 16 55	° ' " +82 11	h m 16 58	° ' " +33 41
Jan. 0.9	49.68	21.2	42.23	45.9	16.59	64.8	14.50	19.0	10.27	62.0
10.9	50.26	19.6	42.48	42.7	16.81	62.6	15.19	15.6	10.49	58.9
20.9	50.91	18.4	42.76	39.8	17.06	60.5	16.14	12.6	10.74	56.1
30.8	51.62	17.6	43.07	37.3	17.33	58.5	17.34	10.0	11.03	53.5
Feb. 9.8	52.37	17.2	43.41	35.2	17.62	56.9	18.74	8.0	11.34	51.4
19.8	53.13	17.2	43.76	33.7	17.92	55.5	20.27	6.5	11.67	49.8
29.8	53.90	17.7	44.11	32.8	18.22	54.5	21.88	5.7	12.00	48.7
Mar. 10.7	54.66	18.5	44.45	32.4	18.51	53.9	23.52	5.5	12.33	48.2
20.7	55.40	19.7	44.78	32.7	18.80	53.7	25.11	6.0	12.65	48.3
30.7	56.10	21.2	45.10	33.6	19.07	53.9	26.61	7.1	12.95	48.9
Apr. 9.7	56.76	23.0	45.38	35.0	19.33	54.5	27.96	8.8	13.24	50.1
19.6	57.36	25.1	45.64	36.8	19.57	55.4	29.13	11.0	13.50	51.7
29.6	57.89	27.4	45.87	39.0	19.78	56.5	30.06	13.6	13.73	53.7
May 9.6	58.35	29.9	46.05	41.5	19.97	57.9	30.74	16.4	13.93	56.0
19.5	58.72	32.5	46.20	44.2	20.14	59.4	31.14	19.5	14.09	58.5
29.5	59.01	35.1	46.30	47.0	20.27	61.0	31.27	22.6	14.22	61.1
June 8.5	59.20	37.8	46.36	49.7	20.37	62.6	31.11	25.7	14.31	63.8
18.5	59.30	40.5	46.38	52.4	20.44	64.2	30.68	28.7	14.35	66.4
28.4	59.49	43.0	46.35	54.9	20.47	65.7	29.99	31.5	14.35	68.9
July 8.4	59.18	45.4	46.28	57.2	20.46	67.1	29.05	34.1	14.31	71.2
18.4	58.98	47.5	46.16	59.2	20.42	68.3	27.90	36.3	14.23	73.2
28.4	58.60	49.3	46.01	60.9	20.34	69.4	26.56	38.1	14.11	75.0
Aug. 7.3	58.32	51.2	45.83	62.2	20.24	70.3	25.06	39.5	13.96	76.4
17.3	57.88	51.8	45.61	63.1	20.10	71.0	23.42	40.4	13.77	77.4
27.3	57.30	52.3	45.38	63.5	19.95	71.4	21.70	40.9	13.56	78.0
Sept. 6.2	56.88	52.4	45.13	63.6	19.78	71.6	19.93	40.8	13.34	78.3
16.2	56.37	52.1	44.88	63.1	19.60	71.5	18.15	40.2	13.11	78.1
26.2	55.87	51.2	44.64	62.2	19.43	71.2	16.39	39.2	12.88	77.4
Oct. 6.2	55.42	49.9	44.42	60.9	19.27	70.6	14.71	37.6	12.67	76.4
16.1	55.04	48.2	44.22	59.1	19.13	69.8	13.14	35.6	12.47	74.9
26.1	54.74	46.2	44.06	56.9	19.02	68.7	11.72	33.1	12.31	73.0
Nov. 5.1	54.55	44.0	43.94	54.4	18.95	67.3	10.50	30.3	12.19	70.8
15.1	54.48	41.6	43.87	51.5	18.92	65.7	9.51	27.1	12.12	68.2
25.0	54.54	39.1	43.87	48.3	18.94	63.9	8.79	23.6	12.10	65.3
Dec. 5.0	54.72	36.6	43.92	45.0	19.01	61.9	8.36	20.0	12.14	62.2
15.0	55.03	34.3	44.03	41.6	19.13	59.7	8.23	16.3	12.24	59.0
24.0	55.45	32.2	44.20	38.2	19.20	57.5	8.42	12.7	12.38	55.8
34.0	55.98	30.4	44.42	34.8	19.50	55.2	8.91	9.2	12.58	52.0

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

377

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Ophiuchi.		α^1 Hercules.		π Hercules.		θ Ophiuchi.		δ Ophiuchi.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.
	h m 17 5	° ' " -15 36	h m 17 10	° ' " +14 29	h m 17 11	° ' " +36 54	h m 17 16	° ' " -24 54	h m 17 20	° ' " -24 5
Jan. 0.9	3.60	36.4	24.91	41.6	48.22	43.2	18.89	24.3	42.41	23.7
10.9	3.84	37.3	25.12	39.2	48.43	40.0	19.13	24.6	42.65	24.0
20.9	4.10	38.3	25.35	36.9	48.68	37.0	19.40	25.0	42.91	24.4
30.9	4.39	39.3	25.62	34.8	48.96	34.4	19.70	25.5	43.20	24.9
Feb. 9.8	4.69	40.2	25.90	33.0	49.27	32.1	20.02	26.0	43.52	25.5
19.8	5.00	41.0	26.19	31.6	49.59	30.4	20.34	26.6	43.84	26.0
29.8	5.32	41.8	26.49	30.6	49.93	29.2	20.67	27.1	44.16	26.5
Mar. 10.8	5.63	42.4	26.79	30.0	50.27	28.6	21.00	27.6	44.49	27.0
20.7	5.93	42.8	27.08	29.8	50.60	28.6	21.33	28.1	44.82	27.4
30.7	6.22	43.1	27.36	30.0	50.92	29.2	21.64	28.5	45.13	27.8
Apr. 9.7	6.50	43.3	27.63	30.7	51.22	30.4	21.95	28.8	45.44	28.1
19.6	6.77	43.4	27.88	31.7	51.50	32.0	22.23	29.2	45.72	28.3
29.6	7.01	43.3	28.11	33.1	51.75	34.0	22.50	29.4	45.99	28.5
May 9.6	7.23	43.1	28.31	34.7	51.96	36.4	22.74	29.7	46.24	28.7
19.6	7.42	42.9	28.49	36.4	52.14	39.0	22.96	29.9	46.46	28.9
29.5	7.59	42.7	28.64	38.3	52.28	41.7	23.15	30.1	46.65	29.1
June 8.5	7.72	42.4	28.75	40.2	52.38	44.5	23.30	30.4	46.81	29.3
18.5	7.82	42.1	28.83	42.1	52.43	47.2	23.42	30.7	46.93	29.5
28.5	7.88	41.9	28.87	43.9	52.44	49.9	23.50	30.9	47.01	29.7
July 8.4	7.90	41.7	28.87	45.6	52.41	52.4	23.53	31.2	47.04	29.9
18.4	7.88	41.5	28.84	47.1	52.33	54.6	23.52	31.5	47.04	30.2
28.4	7.83	41.4	28.76	48.4	52.20	56.5	23.47	31.8	46.99	30.4
Aug. 7.3	7.73	41.2	28.66	49.5	52.04	58.1	23.38	32.0	46.90	30.7
17.3	7.61	41.1	28.53	50.3	51.85	59.2	23.25	32.2	46.78	30.9
27.3	7.46	41.0	28.37	50.9	51.63	60.0	23.10	32.3	46.63	31.0
Sept. 6.3	7.30	41.0	28.19	51.2	51.40	60.4	22.93	32.4	46.46	31.1
16.2	7.13	40.9	28.01	51.2	51.15	60.3	22.74	32.4	46.28	31.0
26.2	6.96	40.8	27.83	50.9	50.91	59.8	22.56	32.2	46.10	31.0
Oct. 6.2	6.80	40.8	27.65	50.3	50.67	58.8	22.39	32.1	45.92	30.8
16.2	6.66	40.8	27.50	49.4	50.46	57.4	22.24	31.8	45.77	30.6
26.1	6.55	40.9	27.37	48.2	50.28	55.6	22.12	31.6	45.65	30.4
Nov. 5.1	6.49	41.0	27.28	46.7	50.14	53.3	22.04	31.3	45.57	30.2
15.1	6.47	41.3	27.23	44.9	50.04	50.7	22.01	31.1	45.53	30.0
25.0	6.49	41.7	27.24	42.9	50.00	47.8	22.03	30.9	45.55	29.9
Dec. 5.0	6.57	42.2	27.29	40.7	50.02	44.7	22.10	30.8	45.62	29.8
15.0	6.70	42.8	27.38	38.3	50.09	41.4	22.22	30.8	45.74	29.9
25.0	6.87	43.6	27.53	35.9	50.22	38.1	22.40	31.0	45.91	30.1
34.9	7.09	44.4	27.71	33.4	50.40	34.8	22.62	31.2	46.12	30.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Ursæ Majoris.			η Bootis.			θ Apodis.			β Centauri.			π Hydræ.		
	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion South.
	h m	s	°	h m	s	°	h m	s	°	h m	s	°	h m	s	°
	13 43		+49 45	13 50		+18 51	13 56		-76 20	13 57		-59 55	14 1		-26 14
Jan. 0.8	53.44		71.2	16.81		30.6	16.91		45.7	17.36		23.2	6.18		8.0
10.8	53.87	.43	69.2	17.14	.33	28.4	17.99	1.08	46.0	17.92	.56	23.9	6.53	.35	9.6
20.8	54.31	.44	67.7	17.48	.34	26.4	19.07	1.08	46.9	18.48	.55	25.1	6.89	.36	11.3
30.7	54.75	.42	66.8	17.81	.31	24.8	20.13	1.01	48.3	19.03	.52	26.8	7.23	.33	13.2
Feb. 9.7	55.17	.38	66.5	18.12	.28	23.6	21.14	0.95	50.2	19.55	.49	28.9	7.56	.31	15.2
19.7	55.55	.34	66.8	18.40	.26	22.8	22.09	0.85	52.6	20.04	.43	31.2	7.87	.27	17.2
29.6	55.89	.29	67.7	18.66	.22	22.5	22.94	0.74	55.3	20.47	.39	33.9	8.14	.25	19.2
Mar. 10.6	56.18	.23	69.1	18.88	.19	22.6	23.68	0.63	58.4	20.86	.33	36.7	8.39	.21	21.0
20.6	56.41	.18	71.0	19.07	.15	23.1	24.31	0.50	61.7	21.18	.27	39.7	8.60	.17	22.8
30.6	56.59	.12	73.2	19.22	.11	23.9	24.81	0.37	65.1	21.45	.20	42.8	8.77	.14	24.4
Apr. 9.5	56.71	.07	75.7	19.33	.08	25.0	25.18	0.23	68.6	21.65	.15	45.8	8.91	.10	25.9
19.5	56.78	.01	78.3	19.41	.05	26.3	25.41	0.11	72.1	21.80	.08	48.8	9.01	.08	27.2
29.5	56.79	.04	81.0	19.46	.01	27.7	25.52	0.03	75.6	21.88	.03	51.7	9.09	.04	28.4
May 9.5	56.75	.08	83.6	19.47	.01	29.2	25.49	0.16	78.9	21.91	.03	54.4	9.13	.02	29.4
19.4	56.67	.12	86.1	19.46	.03	30.7	25.33	0.29	82.0	21.88	.09	56.9	9.15	.02	30.2
29.4	56.55	.16	88.3	19.43	.06	32.2	25.04	0.41	84.9	21.79	.14	59.2	9.13	.04	30.8
June 8.4	56.39	.18	90.2	19.37	.10	33.6	24.63	0.51	87.4	21.65	.19	61.2	9.09	.06	31.3
18.3	56.21	.20	91.8	19.29	.10	34.8	24.12	0.61	89.5	21.46	.23	62.8	9.03	.09	31.6
28.3	56.01	.22	93.0	19.19	.11	35.8	23.51	0.69	91.3	21.23	.27	64.0	8.94	.11	31.7
July 8.3	55.79	.23	93.7	19.08	.12	36.6	22.82	0.74	92.5	20.96	.30	64.8	8.83	.12	31.6
18.3	55.56	.24	93.9	18.96	.13	37.2	22.08	0.78	93.2	20.66	.32	65.1	8.71	.14	31.3
28.2	55.32	.23	93.7	18.83	.14	37.5	21.30	0.79	93.4	20.34	.32	65.0	8.57	.15	30.9
Aug. 7.2	55.09	.23	93.0	18.69	.13	37.6	20.51	0.78	93.0	20.02	.33	64.5	8.42	.15	30.3
17.2	54.86	.21	91.9	18.56	.13	37.4	19.73	0.73	92.1	19.69	.30	63.5	8.27	.14	29.5
27.2	54.65	.19	90.4	18.43	.11	36.9	19.00	0.65	90.7	19.39	.28	62.1	8.13	.13	28.6
Sept. 6.1	54.46	.15	88.4	18.32	.09	36.1	18.35	0.55	88.9	19.11	.23	60.4	8.00	.10	27.7
16.1	54.31	.12	86.0	18.23	.06	35.1	17.80	0.41	86.7	18.88	.20	58.4	7.90	.08	26.7
26.1	54.19	.07	83.3	18.17	.03	33.8	17.39	0.26	84.1	18.72	.16	56.2	7.82	.05	25.7
Oct. 6.0	54.12	.02	80.3	18.14	.01	32.2	17.13	0.09	81.4	18.62	.01	53.8	7.79	.01	24.8
16.0	54.11	.05	77.0	18.15	.06	30.3	17.04	0.09	78.5	18.61	.07	51.4	7.80	.05	24.1
26.0	54.16	.11	73.6	18.21	.10	28.2	17.13	0.28	75.6	18.68	.17	49.1	7.85	.12	23.5
Nov. 5.0	54.27	.18	70.0	18.31	.15	25.8	17.41	0.46	72.9	18.85	.26	47.0	7.97	.17	23.2
14.9	54.45	.24	66.4	18.46	.20	23.3	17.87	0.61	70.4	19.11	.34	45.1	8.14	.21	23.1
24.9	54.69	.30	62.8	18.66	.25	20.7	18.50	0.78	68.3	19.45	.42	43.6	8.35	.27	23.3
Dec. 4.9	54.99	.36	59.4	18.91	.28	18.0	19.28	0.90	66.6	19.87	.48	42.5	8.62	.30	23.9
14.8	55.35	.40	56.3	19.19	.31	15.3	20.18	1.00	65.4	20.35	.52	41.9	8.92	.34	24.8
24.8	55.75	.42	53.5	19.50	.33	12.7	21.18	1.06	64.8	20.87	.56	41.8	9.26	.35	26.0
34.8	56.17		51.1	19.83		10.3	22.24		64.7	21.43		42.3	9.61		27.5

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

367

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Draconis.		δ Bootis.		κ Virginis.		ζ Ursæ Minoris.		α Bootis. (Arcturus.)	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 14 1	° ' " +64 48	h m 14 6	° ' " +25 31	h m 14 7	° ' " - 9 50	h m 14 9	° ' " +77 58	h m 14 11	° ' " +19 39
Jan. 0.8	51.89	44.6	10.78	35.3	57.63	36.0	8.39	35.5	26.32	39.3
10.8	52.48	42.6	11.12	33.0	57.96	37.9	9.45	33.6	26.65	36.9
20.8	53.09	41.2	11.46	31.0	58.29	39.8	10.58	32.4	26.98	34.8
30.7	53.70	40.4	11.80	29.4	58.61	41.7	11.73	31.8	27.31	33.1
Feb. 9.7	54.29	40.3	12.13	28.3	58.92	43.5	12.87	31.9	27.63	31.8
19.7	54.85	40.8	12.43	27.7	59.21	45.1	13.94	32.6	27.92	30.9
29.7	55.36	42.0	12.71	27.6	59.47	46.5	14.92	34.0	28.19	30.5
Mar. 10.6	55.80	43.7	12.95	27.9	59.70	47.7	15.77	35.9	28.43	30.5
20.6	56.16	45.9	13.16	28.7	59.90	48.6	16.47	38.3	28.63	30.9
30.6	56.43	48.5	13.33	29.8	60.06	49.4	17.00	41.0	28.80	31.7
Apr. 9.5	56.62	51.3	13.46	31.2	60.20	49.9	17.35	44.0	28.93	32.8
19.5	56.71	54.3	13.55	32.9	60.30	50.2	17.50	47.1	29.03	34.1
29.5	56.72	57.3	13.61	34.7	60.38	50.4	17.47	50.2	29.09	35.5
May 9.5	56.65	60.3	13.64	36.5	60.43	50.4	17.26	53.2	29.12	37.1
19.4	56.51	63.0	13.63	38.4	60.45	50.3	16.89	56.0	29.13	38.7
29.4	56.29	65.5	13.60	40.1	60.44	50.1	16.37	58.4	29.11	40.2
June 8.4	56.02	67.6	13.54	41.8	60.41	49.8	15.71	60.5	29.06	41.6
18.4	55.70	69.3	13.46	43.2	60.36	49.4	14.95	62.2	28.99	42.9
28.3	55.34	70.6	13.36	44.4	60.29	49.0	14.11	63.3	28.90	44.0
July 8.3	54.95	71.3	13.24	45.4	60.20	48.5	13.20	64.0	28.79	44.9
18.3	54.54	71.6	13.11	46.1	60.09	48.0	12.25	64.1	28.66	45.6
28.2	54.12	71.3	12.96	46.5	59.97	47.5	11.28	63.7	28.52	46.0
Aug 7.2	53.70	70.5	12.81	46.5	59.84	47.0	10.32	62.7	28.38	46.1
17.2	53.29	69.2	12.66	46.2	59.71	46.5	9.39	61.2	28.24	45.9
27.2	52.91	67.4	12.51	45.6	59.59	46.1	8.51	59.2	28.10	45.4
Sept. 6.1	52.56	65.2	12.38	44.7	59.47	45.7	7.71	56.8	27.97	44.7
16.1	52.26	62.5	12.27	43.4	59.37	45.4	6.99	54.0	27.85	43.6
26.1	52.01	59.5	12.18	41.8	59.30	45.2	6.39	50.8	27.77	42.3
Oct. 6.1	51.83	56.2	12.13	39.9	59.26	45.2	5.93	47.3	27.71	40.6
16.0	51.73	52.6	12.12	37.7	59.27	45.4	5.61	43.6	27.70	38.7
26.0	51.72	48.8	12.15	35.3	59.32	45.8	5.46	39.7	27.73	36.5
Nov. 5.0	51.79	44.9	12.24	32.6	59.41	46.4	5.49	35.8	27.81	34.1
14.9	51.96	41.0	12.38	29.8	59.56	47.3	5.70	31.9	27.94	31.5
24.9	52.23	37.3	12.56	26.9	59.75	48.5	6.10	28.1	28.12	28.8
Dec. 4.9	52.59	33.7	12.80	23.9	59.99	49.9	6.68	24.6	28.34	26.0
14.9	53.03	30.4	13.07	21.0	60.27	51.5	7.42	21.4	28.60	23.2
24.8	53.54	27.5	13.38	18.2	60.57	53.2	8.31	18.6	28.90	20.5
34.8	54.10	25.1	13.71	15.7	60.89	55.1	9.31	16.3	29.22	18.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Octantis.		λ Bootis.		λ Virginis.		θ Bootis.		ζ Ursæ Minoris.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 14 11	° 83 14	h m 14 12	° 46 30	h m 14 14	° 12 56	h m 14 22	° 52 16	h m 14 27	° 76 5
Jan. 0.8	58.39	24.6	51.53	30.3	6.14	42.9	2.07	24.3	39.27	67.2
10.8	60.44	24.5	51.93	27.9	6.47	44.7	2.50	21.8	40.18	65.1
20.8	62.53	25.0	52.34	26.1	6.80	46.5	2.95	20.0	41.14	63.5
30.7	64.61	26.0	52.76	24.8	7.13	48.4	3.40	18.7	42.14	62.6
Feb. 9.7	66.62	27.6	53.16	24.2	7.45	50.1	3.84	18.0	43.14	62.4
19.7	68.52	29.7	53.54	24.1	7.74	51.8	4.26	18.0	44.10	62.9
29.7	70.26	32.2	53.88	24.6	8.01	53.3	4.65	18.6	44.99	64.0
Mar. 10.6	71.80	35.1	54.19	25.7	8.24	54.6	4.99	19.8	45.78	65.7
20.6	73.13	38.3	54.44	27.3	8.45	55.7	5.29	21.5	46.45	67.9
30.6	74.22	41.7	54.65	29.3	8.62	56.6	5.52	23.6	46.98	70.5
Apr. 9.5	75.05	45.2	54.81	31.6	8.77	57.3	5.70	26.1	47.35	73.3
19.5	75.61	48.8	54.91	34.2	8.88	57.8	5.82	28.8	47.56	76.4
29.5	75.89	52.4	54.96	36.8	8.96	58.2	5.88	31.6	47.62	79.5
May 9.5	75.89	55.9	54.97	39.4	9.02	58.4	5.89	34.4	47.51	82.6
19.4	75.62	59.3	54.93	42.0	9.05	58.4	5.85	37.1	47.26	85.5
29.4	75.08	62.5	54.86	44.4	9.05	58.4	5.76	39.6	46.87	88.1
June 8.4	74.28	65.3	54.74	46.5	9.02	58.2	5.62	41.9	46.37	90.4
18.4	73.25	67.8	54.60	48.3	8.97	57.9	5.45	43.8	45.76	92.3
28.3	72.01	69.8	54.42	49.8	8.90	57.6	5.24	45.3	45.06	93.8
July 8.3	70.59	71.4	54.23	50.9	8.81	57.2	5.01	46.4	44.30	94.7
18.3	69.04	72.5	54.02	51.5	8.70	56.8	4.76	47.1	43.49	95.0
28.3	67.39	73.0	53.79	51.6	8.58	56.3	4.49	47.2	42.66	94.9
Aug. 7.2	65.71	73.0	53.56	51.3	8.45	55.8	4.22	46.9	41.81	94.2
17.2	64.05	72.4	53.33	50.6	8.32	55.3	3.94	46.1	40.98	93.0
27.2	62.47	71.2	53.12	49.4	8.18	54.8	3.68	44.9	40.18	91.3
Sept. 6.1	61.03	69.6	52.91	47.8	8.06	54.3	3.43	43.2	39.44	89.2
16.1	59.79	67.5	52.73	45.8	7.96	53.9	3.21	41.0	38.76	86.6
26.1	58.40	65.0	52.59	43.4	7.88	53.6	3.03	38.4	38.18	83.6
Oct 6.1	58.11	62.2	52.49	40.6	7.84	53.4	2.89	35.5	37.71	80.2
16.0	57.75	59.3	52.44	37.5	7.84	53.4	2.81	32.3	37.36	76.6
26.0	57.75	56.3	52.44	34.2	7.88	53.6	2.79	29.9	37.16	72.9
Nov. 5.0	58.12	53.3	52.51	30.8	7.97	54.1	2.83	25.2	37.11	69.0
15.0	58.85	50.6	52.64	27.2	8.12	54.8	2.94	21.5	37.22	65.0
24.9	59.92	48.1	52.83	23.6	8.31	55.8	3.13	17.8	37.50	61.2
Dec 4.9	61.30	46.0	53.08	20.1	8.54	57.0	3.38	14.2	37.94	57.5
14.9	62.94	44.4	53.39	16.8	8.82	58.4	3.70	10.8	38.53	54.1
24.8	64.79	43.4	53.74	13.8	9.12	60.0	4.07	7.6	39.26	51.1
34.8	66.79	42.0	54.13	11.1	9.44	61.9	4.48	4.9	40.10	48.6

FIXED STARS, 1908.

369

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Bootis.		α Centauri.		33 Bootis.		α Apodis.		ε Bootis.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m 14 27	° ' " 30 46	h m 14 33	° ' " 60 27	h m 14 35	° ' " 44 47	h m 14 36	° ' " 78 38	h m 14 40	° ' " 27 27
Jan. 0.8	50.25	26.2	18.00	0.3	23.03	57.7	18.28	53.7	56.42	39.6
10.8	50.59	23.8	18.55	0.5	23.41	55.2	19.53	53.3	56.75	37.1
20.8	50.94	21.7	19.11	1.2	23.80	53.1	20.82	53.5	57.09	34.9
30.8	51.29	20.0	19.67	2.3	24.21	51.5	22.13	54.3	57.43	33.2
Feb. 9.7	51.63	18.9	20.21	3.9	24.60	50.6	23.41	55.6	57.77	31.9
19.7	51.96	18.3	20.73	5.8	24.98	50.3	24.64	57.4	58.09	31.1
29.7	52.26	18.2	21.21	8.1	25.33	50.6	25.79	59.6	58.39	30.8
Mar. 10.6	52.52	18.7	21.64	10.5	25.65	51.4	26.84	62.2	58.66	31.1
20.6	52.75	19.6	22.02	13.2	25.92	52.8	27.76	65.1	58.90	31.8
30.6	52.95	20.9	22.35	16.0	26.15	54.6	28.55	68.3	59.10	32.9
Apr. 9.6	53.10	22.5	22.62	18.8	26.33	56.8	29.20	71.6	59.26	34.4
19.5	53.22	24.4	22.83	21.7	26.46	59.3	29.69	75.0	59.39	36.1
29.5	53.30	26.5	22.98	24.5	26.54	61.8	30.02	78.4	59.49	38.0
May 9.5	53.34	28.6	23.07	27.3	26.58	64.5	30.18	81.8	59.55	40.1
19.5	53.35	30.8	23.10	29.8	26.58	67.1	30.18	85.1	59.57	42.1
29.4	53.33	32.9	23.07	32.2	26.53	69.6	30.02	88.2	59.57	44.1
June 8.4	53.28	34.8	22.97	34.4	26.44	71.8	29.69	91.1	59.53	46.0
18.4	53.20	36.5	22.82	36.2	26.32	73.8	29.21	93.6	59.47	47.7
28.3	53.10	37.9	22.62	37.8	26.17	75.5	28.60	95.8	59.38	49.2
July 8.3	52.97	39.1	22.36	38.9	25.99	76.8	27.86	97.5	59.26	50.4
18.3	52.82	39.9	22.07	39.6	25.79	77.6	27.02	98.8	59.13	51.3
28.3	52.66	40.4	21.75	39.9	25.57	78.0	26.11	99.5	58.98	51.9
Aug. 7.2	52.49	40.5	21.40	39.8	25.35	78.0	25.15	99.7	58.82	52.2
17.2	52.32	40.2	21.04	39.2	25.12	77.6	24.18	99.4	58.65	52.1
27.2	52.15	39.6	20.69	38.2	24.89	76.6	23.23	98.5	58.48	51.6
Sept. 6.2	51.99	38.6	20.37	36.8	24.67	75.3	22.34	97.1	58.32	50.8
16.1	51.85	37.2	20.08	35.1	24.48	73.5	21.55	95.3	58.17	49.7
26.1	51.73	35.5	19.84	33.1	24.31	71.3	20.89	93.0	58.05	48.2
Oct. 6.1	51.65	33.5	19.66	30.9	24.19	68.7	20.40	90.5	57.96	46.3
16.0	51.61	31.1	19.57	28.6	24.11	65.8	20.11	87.7	57.91	44.1
26.0	51.61	28.5	19.57	26.2	24.08	62.7	20.03	84.8	57.90	41.7
Nov. 5.0	51.67	25.6	19.66	24.0	24.12	59.3	20.17	81.9	57.94	39.0
15.0	51.78	22.6	19.84	21.9	24.21	55.7	20.53	79.2	58.04	36.1
24.9	51.94	19.5	20.12	20.1	24.37	52.2	21.11	76.7	58.19	33.1
Dec. 4.9	52.16	16.3	20.48	18.7	24.59	48.6	21.89	74.5	58.39	30.1
14.9	52.41	13.2	20.91	17.7	24.87	45.2	22.85	72.8	58.63	27.1
24.9	52.71	10.3	21.40	17.1	25.19	42.0	23.95	71.6	58.92	24.1
34.8	53.04	7.6	21.93	17.1	25.55	39.2	25.16	70.9	59.23	21.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	σ Sagittarii.		γ Lyrae.		ζ Aquilæ.		ϵ Lyrae.		δ Sagittarii.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 18 49	° ' " -26 24	h m 18 55	° ' " +32 33	h m 19 1	° ' " +13 43	h m 19 3	° ' " +35 57	h m 19 12	° ' " -19 6
	s	"	s	"	s	"	s	"	s	"
Jan. 1.0	30.88	42.4	27.80	47.2	8.61	34.4	58.82	20.6	12.57	63.6
	.15	0.2	.08	3.0	.10	2.2	.07	3.1	.12	0.2
11.0	31.03	42.2	27.88	44.2	8.71	32.2	58.89	17.5	12.69	63.8
	.19	0.2	.13	2.9	.13	2.1	.12	3.0	.15	0.2
21.0	31.22	42.0	28.01	41.3	8.84	30.1	59.01	14.5	12.84	64.0
	.22	0.2	.18	2.8	.18	2.0	.17	2.9	.19	0.1
30.9	31.44	41.8	28.19	38.5	9.02	28.1	59.18	11.6	13.03	64.1
	.25	0.2	.21	2.5	.20	1.8	.20	2.7	.22	0.1
Feb. 9.9	31.69	41.6	28.40	36.0	9.22	26.3	59.38	8.9	13.25	64.2
	.28	0.2	.24	2.2	.22	1.5	.24	2.3	.24	0.1
19.9	31.97	41.4	28.64	33.8	9.44	24.8	59.62	6.6	13.49	64.1
	.30	0.2	.27	1.7	.25	1.2	.27	1.9	.27	0.1
29.9	32.27	41.2	28.91	32.1	9.69	23.6	59.89	4.7	13.76	64.0
	.31	0.3	.29	1.3	.27	0.8	.29	1.3	.28	0.2
Mar. 10.8	32.58	40.9	29.20	30.8	9.96	22.8	60.18	3.4	14.04	63.8
	.32	0.3	.31	0.7	.28	0.4	.31	0.8	.30	0.3
20.8	32.90	40.6	29.51	30.1	10.24	22.4	60.49	2.6	14.34	63.5
	.32	0.4	.31	0.1	.28	0.0	.33	0.3	.30	0.5
30.8	33.22	40.2	29.82	30.0	10.52	22.4	60.82	2.3	14.64	63.0
	.34	0.3	.32	0.4	.29	0.5	.33	0.4	.31	0.5
Apr. 9.7	33.56	39.9	30.14	30.4	10.81	22.9	61.15	2.7	14.95	62.5
	.33	0.4	.32	1.0	.29	0.8	.32	0.9	.32	0.7
19.7	33.89	39.5	30.46	31.4	11.10	23.7	61.47	3.6	15.27	61.8
	.32	0.4	.30	1.4	.29	1.2	.32	1.4	.31	0.7
29.7	34.21	39.1	30.76	32.8	11.39	24.9	61.79	5.0	15.58	61.1
	.31	0.3	.29	1.9	.28	1.5	.30	1.9	.31	0.7
May 9.7	34.52	38.8	31.05	34.7	11.67	26.4	62.09	6.9	15.89	60.4
	.30	0.3	.27	2.2	.26	1.8	.28	2.2	.29	0.7
19.6	34.82	38.5	31.32	36.9	11.93	28.2	62.37	9.1	16.18	59.7
	.27	0.2	.24	2.5	.24	1.9	.26	2.6	.28	0.7
29.6	35.09	38.3	31.56	39.4	12.17	30.1	62.63	11.7	16.46	59.0
	.24	0.1	.21	2.7	.21	2.1	.21	2.7	.24	0.6
June 8.6	35.33	38.2	31.77	42.1	12.38	32.2	62.84	14.4	16.70	58.4
	.21	0.1	.17	2.8	.18	2.1	.18	3.0	.22	0.5
18.6	35.54	38.1	31.94	44.9	12.56	34.3	63.02	17.4	16.92	57.9
	.17	0.1	.13	2.9	.14	2.2	.13	2.9	.18	0.4
28.5	35.71	38.2	32.07	47.8	12.70	36.5	63.15	20.3	17.10	57.5
	.13	0.3	.08	2.8	.10	2.0	.09	3.0	.14	0.3
July 8.5	35.84	38.5	32.15	50.6	12.80	38.5	63.24	23.3	17.24	57.2
	.08	0.3	.03	2.7	.06	1.9	.04	2.8	.10	0.2
18.5	35.92	38.8	32.18	53.3	12.86	40.4	63.28	26.1	17.34	57.0
	.03	0.4	.02	2.5	.02	1.8	.02	2.7	.05	0.1
28.4	35.95	39.2	32.16	55.8	12.88	42.2	63.26	28.8	17.39	56.9
	.02	0.4	.06	2.3	.02	1.6	.06	2.4	.01	0.1
Aug. 7.4	35.93	39.6	32.10	58.1	12.86	43.8	63.20	31.2	17.40	57.0
	.06	0.5	.11	1.9	.07	1.3	.11	2.2	.04	0.2
17.4	35.87	40.1	31.99	60.0	12.79	45.1	63.09	33.4	17.36	57.2
	.10	0.5	.15	1.7	.11	1.1	.15	1.8	.08	0.2
27.4	35.77	40.6	31.84	61.7	12.68	46.2	62.94	35.2	17.28	57.4
	.14	0.5	.18	1.3	.13	0.9	.19	1.4	.12	0.3
Sept. 6.3	35.63	41.1	31.66	63.0	12.55	47.1	62.75	36.6	17.16	57.7
	.16	0.4	.21	0.9	.16	0.5	.22	1.1	.14	0.3
16.3	35.47	41.5	31.45	63.9	12.39	47.6	62.53	37.7	17.02	58.0
	.18	0.4	.22	0.5	.18	0.3	.23	0.7	.17	0.3
26.3	35.29	41.9	31.23	64.4	12.21	47.9	62.30	38.4	16.85	58.3
	.19	0.2	.23	0.1	.19	0.0	.25	0.2	.18	0.3
Oct. 6.3	35.10	42.1	31.00	64.5	12.02	47.9	62.05	38.6	16.67	58.6
	.18	0.2	.23	0.3	.18	0.3	.24	0.3	.17	0.3
16.2	34.92	42.3	30.77	64.2	11.84	47.6	61.81	38.3	16.50	58.9
	.17	0.0	.22	0.8	.17	0.6	.23	0.7	.16	0.2
26.2	34.75	42.3	30.55	63.4	11.67	47.0	61.58	37.6	16.34	59.1
	.14	0.0	.19	1.2	.15	0.9	.21	1.1	.14	0.3
Nov. 5.2	34.61	42.3	30.36	62.2	11.52	46.1	61.37	36.5	16.20	59.4
	.11	0.1	.17	1.6	.12	1.2	.18	1.6	.12	0.2
15.1	34.50	42.2	30.19	60.6	11.40	44.9	61.19	34.9	16.08	59.6
	.06	0.2	.12	2.0	.09	1.5	.15	2.0	.08	0.2
25.1	34.44	42.0	30.07	58.6	11.31	43.4	61.04	32.9	16.00	59.8
	.02	0.2	.09	2.3	.05	1.6	.10	2.4	.03	0.2
Dec. 5.1	34.42	41.8	29.98	56.3	11.26	41.8	60.94	30.5	15.97	60.0
	.03	0.2	.03	2.7	.01	1.9	.06	2.6	.01	0.1
15.1	34.45	41.6	29.95	53.6	11.25	39.9	60.88	27.9	15.98	60.1
	.04	0.2	.01	2.8	.03	2.1	.00	2.9	.05	0.2
25.0	34.53	41.4	29.96	50.8	11.28	37.8	60.88	25.0	16.03	60.3
	.12	0.1	.06	2.9	.08	2.1	.05	3.1	.09	0.2
35.0	34.65	41.1	30.02	47.9	11.36	35.7	60.93	21.9	16.12	60.5

FIXED STARS, 1908.

383

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Draconis.		σ Octanis.		θ Lyræ.		τ Draconis.		δ Aquilæ.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 19 12	° +67 29	h m 19	° -89 14	h m 19 13	° +37 57	h m 19 17	° +73 10	h m 19 20	° + 2 55
Jan. 1.0	28.83	61.9	10 51.3	33.3	8.12	71.8	15.67	69.2	49.28	50.1
11.0	28.80	58.3	10 54.6	29.9	8.18	68.7	15.58	65.7	49.37	48.6
21.0	28.88	54.7	11 1.0	26.6	8.29	65.6	15.63	62.1	49.50	47.1
30.9	29.07	51.2	11 10.2	23.5	8.44	62.7	15.83	58.6	49.66	45.7
Feb. 9.9	29.36	48.0	11 22.0	20.6	8.64	59.9	16.16	55.3	49.85	44.5
19.9	29.74	45.1	11 36.0	18.0	8.87	57.5	16.62	52.4	50.06	43.5
29.9	30.19	42.7	11 51.8	15.8	9.14	55.6	17.18	49.9	50.30	42.7
Mar. 10.8	30.71	40.8	12 9.1	14.0	9.43	54.1	17.83	47.9	50.55	42.2
20.8	31.27	39.5	12 27.5	12.7	9.74	53.2	18.55	46.6	50.82	42.1
30.8	31.86	38.9	12 46.5	11.8	10.07	52.9	19.31	45.9	51.10	42.2
Apr. 9.8	32.47	38.9	13 5.8	11.4	10.41	53.1	20.08	45.8	51.39	42.7
19.7	33.07	39.6	13 24.9	11.5	10.74	54.0	20.85	46.4	51.69	43.5
29.7	33.64	40.9	13 43.4	12.1	11.07	55.3	21.59	47.6	51.98	44.6
May 9.7	34.17	42.8	14 1.1	13.1	11.38	57.2	22.27	49.4	52.26	45.9
19.6	34.65	45.1	14 17.4	14.6	11.67	59.4	22.87	51.6	52.54	47.4
29.6	35.06	47.9	14 32.2	16.5	11.93	62.0	23.38	54.3	52.79	49.0
June 8.6	35.38	51.0	14 45.0	18.8	12.16	64.8	23.79	57.3	53.02	50.7
18.6	35.62	54.2	14 55.5	21.3	12.35	67.7	24.07	60.5	53.23	52.3
28.5	35.76	57.6	15 3.5	24.2	12.49	70.8	24.23	63.9	53.39	54.0
July 8.5	35.80	61.1	15 8.8	27.2	12.59	73.8	24.26	67.3	53.52	55.6
18.5	35.75	64.5	15 11.2	30.3	12.63	76.7	24.16	70.7	53.61	57.0
28.5	35.59	67.7	15 10.7	33.4	12.62	79.5	23.94	74.0	53.66	58.3
Aug. 7.4	35.34	70.8	15 7.3	36.4	12.56	82.0	23.59	77.1	53.66	59.4
17.4	35.01	73.6	15 1.1	39.3	12.45	84.3	23.13	79.9	53.62	60.4
27.4	34.59	76.0	14 52.2	41.8	12.30	86.3	22.56	82.4	53.54	61.2
Sept. 6.3	34.11	78.0	14 41.0	44.0	12.11	87.9	21.91	84.6	53.42	61.7
16.3	33.57	79.6	14 27.9	45.7	11.89	89.1	21.18	86.3	53.28	62.0
26.3	33.00	80.7	14 13.4	46.8	11.65	89.9	20.40	87.5	53.12	62.2
Oct. 6.3	32.40	81.3	13 57.9	47.4	11.40	90.2	19.59	88.2	52.95	62.1
16.2	31.79	81.4	13 42.2	47.4	11.15	90.0	18.77	88.4	52.78	61.9
26.2	31.20	80.9	13 26.9	46.7	10.91	89.4	17.95	88.0	52.62	61.4
Nov. 5.2	30.63	79.9	13 12.6	45.4	10.68	88.4	17.17	87.1	52.48	60.8
15.2	30.11	78.3	12 59.9	43.6	10.49	86.9	16.44	85.6	52.36	59.9
25.1	29.65	76.2	12 49.4	41.3	10.33	84.9	15.78	83.7	52.27	58.9
Dec. 5.1	29.27	73.6	12 41.4	38.5	10.21	82.6	15.22	81.2	52.22	57.8
15.1	28.97	70.7	12 36.3	35.4	10.15	79.9	14.77	78.3	52.21	56.5
25.0	28.77	67.4	12 34.4	32.2	10.13	77.0	14.45	75.1	52.24	55.1
35.0	28.68	63.9	12 35.7	28.8	10.16	74.0	14.27	71.7	52.31	53.6

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Coronæ Borealis.			α Serpentis.			ε Serpentis.			ζ Ursæ Minoris.			ε Coronæ Borealis.		
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.	
	h m	°		h m	°		h m	°		h m	°		h m	°	
	15 30	+27 1		15 39	+6 42		15 46	+4 45		15 47	+78 4		15 53	+27 8	
	s	"		s	"		s	"		s	"		s	"	
Jan. 0.9	45.60	.29	24.1	42.17	.28	55.6	11.74	.28	18.9	14.94	.77	32.4	44.65	.27	36.3
10.9	45.89	.29	21.4	42.45	.28	53.4	12.02	.28	16.8	15.71	.91	29.5	44.92	.27	33.5
20.8	46.21	.32	19.0	42.74	.29	51.4	12.31	.29	14.8	16.62	1.02	27.0	45.22	.30	31.0
30.8	46.54	.33	17.0	43.05	.31	49.5	12.62	.31	13.0	17.64	1.09	25.1	45.54	.32	28.8
Feb. 9.8	46.87	.33	15.4	43.36	.31	47.9	12.93	.30	11.4	18.73	1.12	23.8	45.87	.32	27.1
19.7	47.20	.31	14.3	43.67	.30	46.6	13.23	.30	10.1	19.85	1.11	23.2	46.19	.32	25.9
29.7	47.51	.29	13.7	43.97	.28	45.7	13.53	.28	9.2	20.96	1.07	23.3	46.51	.30	25.2
Mar. 10.7	47.80	.28	13.7	44.25	.26	45.1	13.81	.26	8.5	22.03	0.98	24.0	46.81	.29	25.0
20.7	48.08	.24	14.1	44.51	.23	44.9	14.07	.24	8.3	23.01	0.86	25.4	47.10	.26	25.4
30.6	48.32	.21	15.0	44.74	.21	45.1	14.31	.22	8.3	23.87	0.71	27.3	47.36	.23	26.2
Apr. 9.6	48.53	.18	16.4	44.95	.18	45.5	14.53	.19	8.7	24.58	0.56	29.7	47.59	.20	27.5
19.6	48.71	.15	18.0	45.13	.16	46.2	14.72	.19	9.3	25.14	0.38	32.4	47.79	.16	29.1
29.6	48.86	.11	19.9	45.29	.13	47.2	14.88	.16	10.2	25.52	0.20	35.4	47.95	.14	31.0
May 9.5	48.97	.08	22.0	45.42	.10	48.3	15.02	.10	11.2	25.72	0.02	38.5	48.09	.10	33.1
19.5	49.05	.04	24.2	45.52	.07	49.5	15.12	.08	12.3	25.74	0.17	41.6	48.19	.06	35.3
29.5	49.09	.01	26.4	45.59	.03	50.8	15.20	.04	13.5	25.57	0.33	44.7	48.25	.03	37.6
June 8.4	49.10	.03	28.5	45.62	.01	52.1	15.24	.02	14.7	25.24	0.50	47.6	48.28	.00	39.8
18.4	49.07	.06	30.5	45.63	.02	53.3	15.26	.02	15.8	24.74	0.65	50.2	48.28	.05	41.9
28.4	49.01	.09	32.3	45.61	.06	54.4	15.24	.05	16.9	24.09	0.77	52.5	48.23	.07	43.8
July 8.4	48.92	.11	33.8	45.55	.08	55.5	15.19	.08	17.9	23.32	0.88	54.4	48.16	.11	45.5
18.3	48.81	.15	35.1	45.47	.11	56.4	15.11	.10	18.8	22.44	0.97	55.8	48.05	.13	46.9
28.3	48.66	.16	36.0	45.36	.12	57.1	15.01	.13	19.5	21.47	1.03	56.8	47.92	.16	48.0
Aug. 7.3	48.50	.18	36.6	45.24	.15	57.7	14.88	.14	20.1	20.44	1.07	57.2	47.76	.18	48.9
17.3	48.32	.18	36.9	45.09	.15	58.0	14.74	.15	20.5	19.37	1.09	57.2	47.58	.19	49.3
27.2	48.14	.18	36.8	44.94	.16	58.2	14.59	.16	20.7	18.28	1.08	56.6	47.39	.19	49.4
Sept. 6.2	47.96	.18	36.4	44.78	.15	58.2	14.43	.15	20.7	17.20	1.04	55.5	47.20	.19	49.1
16.2	47.78	.16	35.5	44.63	.14	57.9	14.28	.14	20.5	16.16	0.98	53.9	47.01	.18	48.4
26.1	47.62	.14	34.3	44.49	.12	57.4	14.14	.12	20.1	15.18	0.89	51.8	46.83	.16	47.4
Oct. 6.1	47.48	.10	32.8	44.37	.08	56.7	14.02	.09	19.5	14.29	0.77	49.3	46.67	.12	46.0
16.1	47.38	.06	30.9	44.29	.05	55.8	13.93	.05	18.6	13.52	0.64	46.4	46.55	.08	44.2
26.1	47.32	.02	28.6	44.24	.00	54.6	13.88	.01	17.5	12.88	0.48	43.2	46.47	.04	42.1
Nov. 5.0	47.30	.04	26.1	44.24	.05	53.1	13.87	.04	16.2	12.40	0.30	39.7	46.43	.01	39.7
15.0	47.34	.10	23.4	44.29	.09	51.4	13.91	.09	14.6	12.10	0.10	35.9	46.44	.06	37.0
25.0	47.44	.14	20.5	44.38	.15	49.5	14.00	.14	12.9	12.00	0.09	32.1	46.50	.12	34.2
Dec. 5.0	47.58	.20	17.4	44.53	.19	47.5	14.14	.19	10.9	12.09	0.29	28.3	46.62	.17	31.1
14.9	47.78	.24	14.3	44.72	.23	45.3	14.33	.23	8.9	12.38	0.49	24.5	46.79	.22	28.1
24.9	48.02	.27	11.3	44.95	.27	43.1	14.56	.26	6.7	12.87	0.67	21.0	47.01	.26	25.0
34.9	48.29		8.4	45.22		40.8	14.82		4.6	13.54		17.8	47.27		22.1

FIXED STARS, 1908.

373

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Scorpii.		β^1 Scorpii.		ϕ Herculis.		Groombridge 2320.		δ^1 Apodis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 15 54	° ' " -22 21	h m 16 0	° ' " -19 33	h m 16 5	° ' " +45 10	h m 16 6	° ' " +68 2	h m 16 6	° ' " -78 27
Jan. 0.9	51.22	27.9	2.86	6.2	50.02	28.6	0.95	62.0	26.26	37.3
10.9	51.51	28.8	3.16	7.2	50.32	25.5	1.39	58.8	27.32	35.7
20.8	51.83	29.9	3.47	8.3	50.65	22.7	1.91	56.0	28.50	34.6
30.8	52.17	31.1	3.79	9.5	51.01	20.3	2.49	53.8	29.76	34.0
Feb. 9.8	52.50	32.3	4.12	10.7	51.39	18.5	3.11	52.2	31.08	33.9
19.8	52.84	33.5	4.45	11.9	51.77	17.3	3.76	51.2	32.41	34.3
29.8	53.16	34.7	4.77	13.0	52.15	16.8	4.41	50.9	33.73	35.2
Mar. 10.7	53.47	35.8	5.07	14.1	52.51	16.8	5.03	51.3	35.01	36.5
20.7	53.76	36.8	5.36	15.0	52.85	17.5	5.62	52.3	36.23	38.2
30.6	54.03	37.7	5.63	15.8	53.17	18.8	6.15	53.9	37.37	40.3
Apr. 9.6	54.27	38.5	5.87	16.4	53.45	20.5	6.61	56.1	38.40	42.7
19.6	54.49	39.2	6.09	17.0	53.69	22.7	6.99	58.6	39.31	45.3
29.6	54.68	39.8	6.29	17.4	53.89	25.2	7.28	61.5	40.08	48.2
May 9.5	54.85	40.3	6.45	17.7	54.04	27.9	7.47	64.6	40.70	51.2
19.5	54.98	40.7	6.59	18.0	54.14	30.7	7.57	67.8	41.16	54.3
29.5	55.08	41.1	6.70	18.2	54.20	33.6	7.57	70.9	41.45	57.5
June 8.5	55.15	41.4	6.77	18.3	54.21	36.4	7.47	74.0	41.57	60.6
18.4	55.19	41.6	6.80	18.4	54.17	39.0	7.28	76.8	41.51	63.5
28.4	55.18	41.8	6.81	18.4	54.09	41.5	7.01	79.4	41.27	66.3
July 8.4	55.15	41.9	6.78	18.4	53.97	43.6	6.67	81.6	40.86	68.8
18.3	55.08	42.0	6.71	18.4	53.80	45.4	6.25	83.4	40.30	71.0
28.3	54.97	42.0	6.61	18.3	53.50	46.8	5.77	84.7	39.60	72.8
Aug. 7.3	54.84	41.9	6.49	18.1	53.37	47.8	5.25	85.6	38.79	74.1
17.3	54.69	41.7	6.34	17.9	53.12	48.3	4.70	86.0	37.89	74.9
27.2	54.53	41.4	6.18	17.7	52.85	48.3	4.12	85.8	36.93	75.2
Sept. 6.2	54.36	41.1	6.01	17.4	52.58	47.9	3.54	85.1	35.96	75.0
16.2	54.20	40.7	5.85	17.1	52.31	47.0	2.97	83.9	35.02	74.2
26.2	54.04	40.3	5.70	16.8	52.06	45.6	2.43	82.1	34.13	72.9
Oct. 6.1	53.91	39.9	5.57	16.5	51.83	43.8	1.93	79.9	33.35	71.2
16.1	53.82	39.5	5.47	16.2	51.64	41.6	1.49	77.3	32.72	69.0
26.1	53.77	39.2	5.41	16.1	51.49	39.0	1.13	74.3	32.25	66.5
Nov. 5.0	53.76	39.0	5.40	16.0	51.39	36.0	0.85	70.9	31.99	63.8
15.0	53.81	38.9	5.44	16.1	51.35	32.7	0.68	67.3	31.94	61.0
25.0	53.91	39.0	5.54	16.3	51.38	29.3	0.62	63.5	32.12	58.1
Dec. 5.0	54.06	39.3	5.68	16.8	51.47	25.7	0.67	59.6	32.52	55.4
14.9	54.27	39.7	5.88	17.4	51.62	22.1	0.84	55.8	33.14	52.9
24.9	54.52	40.4	6.12	18.2	51.84	18.5	1.11	52.1	33.95	50.7
34.9	54.80	41.3	6.39	19.2	52.10	15.2	1.49	48.6	34.93	48.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Ophiuchi.			σ Coronæ Borealis.			τ Herculis.			γ Apodis.			η Ursæ Minoris.		
	Right Ascension.	Declina- tion South.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.		Right Ascension.	Declina- tion North.	
	h m s	° ' "		h m s	° ' "		h m s	° ' "		h m s	° ' "		h m s	° ' "	
	16 9	- 3 27		16 11	+34 5		16 16	+46 31		16 19	-78 41		16 20	+75 57	
Jan. 0.9	29.27	.26	23.6	11.85	.27	26.9	56.23	.29	51.4	10.46	14.2	6.50	57.3	.32	
10.9	29.53	.29	25.4	12.12	.30	23.9	56.52	.32	48.2	11.50	12.5	7.06	54.1	.28	
20.9	29.82	.30	27.1	12.42	.32	21.2	56.84	.36	45.3	12.67	11.2	7.76	51.3	.23	
30.8	30.12	.31	28.7	12.74	.34	18.9	57.20	.38	42.9	13.94	10.4	8.57	49.0	.17	
Feb. 9.8	30.43	.31	30.1	13.08	.34	17.1	57.58	.39	41.0	15.27	10.1	9.46	47.3	.11	
19.8	30.74	.30	31.4	13.42	.33	15.8	57.97	.38	39.7	16.63	10.3	10.40	46.2	.04	
29.7	31.04	.29	32.4	13.75	.33	15.0	58.35	.38	39.0	17.08	10.9	11.35	45.8	.03	
Mar. 10.7	31.33	.27	33.1	14.08	.30	14.9	58.73	.35	39.0	19.31	12.0	12.29	46.1	.10	
20.7	31.60	.26	33.6	14.38	.28	15.3	59.08	.33	39.6	20.58	13.5	13.18	47.1	.15	
30.7	31.86	.23	33.8	14.66	.26	16.2	59.41	.30	40.8	21.77	15.4	13.99	48.6	.20	
Apr. 9.6	32.09	.21	33.8	14.92	.22	17.6	59.71	.25	42.5	22.86	17.7	14.70	50.6	.25	
19.6	32.30	.19	33.5	15.14	.19	19.4	59.96	.21	44.7	23.84	20.2	15.28	53.1	.29	
29.6	32.49	.16	33.0	15.33	.15	21.6	60.17	.17	47.2	24.69	23.0	15.73	56.0	.30	
May 9.5	32.65	.13	32.4	15.48	.12	23.9	60.34	.12	49.9	25.38	25.9	16.03	59.0	.32	
19.5	32.78	.11	31.7	15.60	.07	26.5	60.46	.07	52.8	25.91	29.0	16.17	62.2	.31	
29.5	32.89	.07	30.9	15.67	.04	29.0	60.53	.02	55.7	26.27	32.1	16.16	65.3	.31	
June 8.5	32.96	.04	30.1	15.71	.01	31.5	60.55	.03	58.6	26.45	35.2	16.00	68.4	.29	
18.4	33.00	.00	29.3	15.70	.04	33.9	60.52	.08	61.3	26.45	38.1	15.69	71.3	.27	
28.4	33.00	.03	28.6	15.66	.08	36.1	60.44	.12	63.8	26.26	41.0	15.25	74.0	.23	
July 8.4	32.97	.06	27.9	15.58	.12	38.1	60.32	.16	66.1	25.90	43.6	14.68	76.3	.19	
18.4	32.91	.08	27.2	15.46	.15	39.8	60.16	.20	68.0	25.37	45.8	14.00	78.2	.14	
28.3	32.83	.12	26.7	15.31	.17	41.2	59.96	.24	69.5	24.69	47.7	13.23	79.6	.10	
Aug. 7.3	32.71	.14	26.2	15.14	.20	42.2	59.72	.25	70.6	23.89	49.2	12.39	80.6	.05	
17.3	32.57	.15	25.8	14.94	.21	42.8	59.47	.28	71.2	22.99	50.2	11.49	81.1	.01	
27.3	32.42	.16	25.6	14.73	.23	42.9	59.19	.29	71.4	22.02	50.7	10.55	81.0	.05	
Sept. 6.2	32.26	.16	25.4	14.50	.22	42.7	58.90	.28	71.1	21.03	50.6	9.60	80.5	.11	
16.2	32.10	.15	25.4	14.28	.20	42.0	58.62	.27	70.3	20.05	50.0	8.67	79.4	.16	
26.2	31.95	.13	25.5	14.08	.19	41.0	58.35	.25	69.0	19.12	48.9	7.77	77.8	.20	
Oct. 6.1	31.82	.10	25.8	13.89	.16	39.5	58.10	.21	67.3	18.29	47.3	6.93	75.8	.25	
16.1	31.72	.07	26.3	13.73	.12	37.6	57.89	.17	65.2	17.60	45.2	6.17	73.3	.29	
26.1	31.65	.02	26.9	13.61	.07	35.4	57.72	.12	62.6	17.07	42.8	5.52	70.4	.33	
Nov. 5.1	31.63	.02	27.8	13.54	.02	32.8	57.60	.05	59.7	16.75	40.1	5.00	67.1	.35	
15.0	31.65	.08	28.8	13.52	.04	29.9	57.55	.00	56.4	16.64	37.4	4.62	63.6	.37	
25.0	31.73	.12	30.0	13.56	.09	26.8	57.55	.07	53.0	16.76	34.5	4.40	59.9	.38	
Dec. 5.0	31.85	.17	31.4	13.65	.15	23.6	57.62	.14	49.4	17.11	31.7	4.35	56.1	.38	
14.9	32.02	.21	33.0	13.80	.20	20.2	57.76	.20	45.7	17.68	29.1	4.48	52.3	.37	
24.9	32.23	.25	34.7	14.00	.24	17.0	57.96	.26	42.1	18.46	26.8	4.78	48.6	.35	
34.9	32.48		36.4	14.24		13.8	58.22		38.7	19.41	24.9	5.25	45.1		

FIXED STARS, 1908.

375

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Draconis.		α Scorpii. (Antares.)		β Herculis.		Λ Draconis.		ζ Ophiuchi.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 16 22	° ' " +61 43	h m 16 23	° ' " -26 13	h m 16 26	° ' " +21 41	h m 16 28	° ' " +68 57	h m 16 32	° ' " -10 22
Jan. 0.9	41.82	14.8	43.43	33.3	13.73	22.1	6.14	56.4	3.24	47.0
10.9	42.16	11.5	43.71	33.9	13.97	19.4	6.54	53.0	3.49	48.3
20.9	42.57	8.5	44.03	34.6	14.24	16.9	7.03	50.1	3.77	49.7
30.8	43.03	6.1	44.35	35.4	14.54	14.7	7.60	47.6	4.07	51.0
Feb. 9.8	43.53	4.2	44.69	36.3	14.85	12.9	8.22	45.7	4.38	52.2
19.8	44.05	2.9	45.04	37.3	15.16	11.5	8.88	44.5	4.69	53.3
29.8	44.58	2.4	45.37	38.2	15.47	10.6	9.54	43.9	5.00	54.3
Mar. 10.7	45.09	2.5	45.70	39.1	15.77	10.2	10.20	44.0	5.30	55.0
20.7	45.58	3.2	46.01	40.0	16.06	10.3	10.83	44.8	5.59	55.6
30.7	46.03	4.6	46.31	40.9	16.33	10.8	11.41	46.2	5.86	55.9
Apr. 9.6	46.43	6.5	46.58	41.6	16.58	11.8	11.92	48.1	6.11	56.1
19.6	46.77	8.9	46.84	42.3	16.80	13.1	12.35	50.5	6.35	56.0
29.6	47.04	11.6	47.06	43.0	16.99	14.8	12.70	53.3	6.56	55.9
May 9.6	47.25	14.6	47.26	43.6	17.16	16.7	12.95	56.3	6.75	55.6
19.5	47.38	17.7	47.43	44.2	17.30	18.7	13.10	59.4	6.90	55.2
29.5	47.43	20.9	47.56	44.7	17.40	20.8	13.15	62.7	7.03	54.7
June 8.5	47.41	24.0	47.66	45.2	17.46	22.9	13.10	65.8	7.13	54.3
18.5	47.32	27.0	47.73	45.6	17.49	25.0	12.95	68.8	7.19	53.8
28.4	47.15	29.7	47.75	46.0	17.49	26.9	12.70	71.5	7.22	53.3
July 8.4	46.92	32.1	47.74	46.3	17.45	28.6	12.37	74.0	7.21	52.9
18.4	46.64	34.1	47.68	46.6	17.37	30.1	11.96	76.0	7.17	52.5
28.3	46.30	35.7	47.59	46.8	17.26	31.4	11.48	77.7	7.09	52.1
Aug. 7.3	45.91	36.8	47.47	46.9	17.12	32.4	10.94	78.8	6.99	51.8
17.3	45.49	37.5	47.32	46.9	16.96	33.1	10.37	79.5	6.85	51.5
27.3	45.05	37.6	47.16	46.8	16.78	33.4	9.76	79.6	6.70	51.3
Sept. 6.2	44.60	37.2	46.98	46.6	16.60	33.4	9.14	79.2	6.54	51.2
16.2	44.15	36.3	46.80	46.3	16.41	33.1	8.52	78.3	6.37	51.1
26.2	43.72	34.9	46.63	45.9	16.22	32.4	7.92	76.9	6.21	51.0
Oct. 6.2	43.32	33.0	46.47	45.5	16.06	31.4	7.36	75.0	6.07	51.1
16.1	42.97	30.6	46.35	45.0	15.92	30.0	6.86	72.6	5.95	51.3
26.1	42.67	27.8	46.27	44.6	15.81	28.3	6.43	69.8	5.87	51.5
Nov. 5.1	42.44	24.7	46.24	44.1	15.75	26.3	6.08	66.7	5.83	52.0
15.0	42.30	21.2	46.26	43.8	15.74	24.0	5.84	63.2	5.84	52.6
25.0	42.24	17.5	46.33	43.6	15.77	21.4	5.71	59.5	5.90	53.3
Dec. 5.0	42.27	13.7	46.46	43.6	15.86	18.7	5.69	55.7	6.00	54.2
15.0	42.39	9.9	46.64	43.7	16.00	15.9	5.80	51.8	6.16	55.3
24.9	42.60	6.1	46.87	44.0	16.18	13.1	6.02	48.1	6.36	56.5
34.9	42.90	2.6	47.14	44.5	16.41	10.3	6.36	44.5	6.60	57.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Triang. Australis.		η Herculis.		κ Ophiuchi.		ϵ Ursæ Minoris.		δ Herculis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 16 38	° -68 51	h m 16 39	° +39 5	h m 16 53	° + 9 30	h m 16 55	° +82 11	h m 16 58	° +33 41
	s "	"	s "	"	s "	"	s "	"	s "	"
Jan. 0.9	49.68	21.2	42.23	45.9	16.59	64.8	14.50	19.0	10.27	62.0
10.9	50.26	19.6	42.48	42.7	16.81	62.6	15.19	15.6	10.49	58.9
20.9	50.91	18.4	42.76	39.8	17.06	60.5	16.14	12.6	10.74	56.1
30.8	51.62	17.6	43.07	37.3	17.33	58.5	17.34	10.0	11.03	53.5
Feb. 9.8	52.37	17.2	43.41	35.2	17.62	56.9	18.74	8.0	11.34	51.4
19.8	53.13	17.2	43.76	33.7	17.92	55.5	20.27	6.5	11.67	49.8
29.8	53.90	17.7	44.11	32.8	18.22	54.5	21.88	5.7	12.00	48.7
Mar. 10.7	54.66	18.5	44.45	32.4	18.51	53.9	23.52	5.5	12.33	48.2
20.7	55.40	19.7	44.78	32.7	18.80	53.7	25.11	6.0	12.65	48.3
30.7	56.10	21.2	45.10	33.6	19.07	53.9	26.61	7.1	12.95	48.9
Apr. 9.7	56.76	23.0	45.38	35.0	19.33	54.5	27.96	8.8	13.24	50.1
19.6	57.36	25.1	45.64	36.8	19.57	55.4	29.13	11.0	13.50	51.7
29.6	57.89	27.4	45.87	39.0	19.78	56.5	30.06	13.6	13.73	53.7
May 9.6	58.35	29.9	46.05	41.5	19.97	57.9	30.74	16.4	13.93	56.0
19.5	58.72	32.5	46.20	44.2	20.14	59.4	31.14	19.5	14.09	58.5
29.5	59.01	35.1	46.30	47.0	20.27	61.0	31.27	22.6	14.22	61.1
June 8.5	59.20	37.8	46.36	49.7	20.37	62.6	31.11	25.7	14.31	63.8
18.5	59.30	40.5	46.38	52.4	20.44	64.2	30.68	28.7	14.35	66.4
28.4	59.29	43.0	46.35	54.9	20.47	65.7	29.99	31.5	14.35	68.9
July 8.4	59.18	45.4	46.28	57.2	20.46	67.1	29.05	34.1	14.31	71.2
18.4	58.98	47.5	46.16	59.2	20.42	68.3	27.90	36.3	14.23	73.2
28.4	58.69	49.3	46.01	60.9	20.34	69.4	26.56	38.1	14.11	75.0
Aug. 7.3	58.32	50.7	45.83	62.2	20.24	70.3	25.06	39.5	13.96	76.4
17.3	57.88	51.8	45.61	63.1	20.10	71.0	23.42	40.4	13.77	77.4
27.3	57.39	52.3	45.38	63.5	19.95	71.4	21.70	40.9	13.56	78.0
Sept. 6.2	56.88	52.4	45.13	63.6	19.78	71.6	19.93	40.8	13.34	78.3
16.2	56.37	52.1	44.88	63.1	19.60	71.5	18.15	40.2	13.11	78.1
26.2	55.87	51.2	44.64	62.2	19.43	71.2	16.39	39.2	12.88	77.4
Oct. 6.2	55.42	49.9	44.42	60.9	19.27	70.6	14.71	37.6	12.67	76.4
16.1	55.04	48.2	44.22	59.1	19.13	69.8	13.14	35.6	12.47	74.9
26.1	54.74	46.2	44.06	56.9	19.02	68.7	11.72	33.1	12.31	73.0
Nov. 5.1	54.55	44.0	43.94	54.4	18.95	67.3	10.50	30.3	12.19	70.8
15.1	54.48	41.6	43.87	51.5	18.92	65.7	9.51	27.1	12.12	68.2
25.0	54.54	39.1	43.87	48.3	18.94	63.9	8.79	23.6	12.10	65.3
Dec. 5.0	54.72	36.6	43.92	45.0	19.01	61.9	8.36	20.0	12.14	62.2
15.0	55.03	34.3	44.03	41.6	19.13	59.7	8.23	16.3	12.24	59.0
24.9	55.45	32.2	44.20	38.2	19.29	57.5	8.42	12.7	12.38	55.8
34.9	55.98	30.4	44.42	34.8	19.50	55.2	8.91	9.2	12.58	52.6

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

377

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Ophiuchi.		α ¹ Herculis.		π Herculis.		θ Ophiuchi.		δ Ophiuchi.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.
	h m 17 5	° 15 36	h m 17 10	° 14 29	h m 17 11	° 36 54	h m 17 16	° 24 54	h m 17 20	° 24 5
	s "	"	s "	"	s "	"	s "	"	s "	"
Jan. 0.9	3.60	36.4	24.91	41.6	48.22	43.2	18.89	24.3	42.41	23.7
10.9	3.84	37.3	25.12	39.2	48.43	40.0	19.13	24.6	42.65	24.0
20.9	4.10	38.3	25.35	36.9	48.68	37.0	19.40	25.0	42.91	24.4
30.9	4.39	39.3	25.62	34.8	48.96	34.4	19.70	25.5	43.20	24.9
Feb. 9.8	4.69	40.2	25.90	33.0	49.27	32.1	20.02	26.0	43.52	25.5
19.8	5.00	41.0	26.19	31.6	49.59	30.4	20.34	26.6	43.84	26.0
29.8	5.32	41.8	26.49	30.6	49.93	29.2	20.67	27.1	44.16	26.5
Mar. 10.8	5.63	42.4	26.79	30.0	50.27	28.6	21.00	27.6	44.49	27.0
20.7	5.93	42.8	27.08	29.8	50.60	28.6	21.33	28.1	44.82	27.4
30.7	6.22	43.1	27.36	30.0	50.92	29.2	21.64	28.5	45.13	27.8
Apr. 9.7	6.50	43.3	27.63	30.7	51.22	30.4	21.95	28.8	45.44	28.1
19.6	6.77	43.4	27.88	31.7	51.50	32.0	22.23	29.2	45.72	28.3
29.6	7.01	43.3	28.11	33.1	51.75	34.0	22.50	29.4	45.99	28.5
May 9.6	7.23	43.1	28.31	34.7	51.96	36.4	22.74	29.7	46.24	28.7
19.6	7.42	42.9	28.49	36.4	52.14	39.0	22.96	29.9	46.46	28.9
29.5	7.59	42.7	28.64	38.3	52.28	41.7	23.15	30.1	46.65	29.1
June 8.5	7.72	42.4	28.75	40.2	52.38	44.5	23.30	30.4	46.81	29.3
18.5	7.82	42.1	28.83	42.1	52.43	47.2	23.42	30.7	46.93	29.5
28.5	7.88	41.9	28.87	43.9	52.44	49.9	23.50	30.9	47.01	29.7
July 8.4	7.90	41.7	28.87	45.6	52.41	52.4	23.53	31.2	47.04	29.9
18.4	7.88	41.5	28.84	47.1	52.33	54.6	23.52	31.5	47.04	30.2
28.4	7.83	41.4	28.76	48.4	52.20	56.5	23.47	31.8	46.99	30.4
Aug. 7.3	7.73	41.2	28.66	49.5	52.04	58.1	23.38	32.0	46.90	30.7
17.3	7.61	41.1	28.53	50.3	51.85	59.2	23.25	32.2	46.78	30.9
27.3	7.46	41.0	28.37	50.9	51.63	60.0	23.10	32.3	46.63	31.0
Sept. 6.3	7.30	41.0	28.19	51.2	51.40	60.4	22.93	32.4	46.46	31.1
16.2	7.13	40.9	28.01	51.2	51.15	60.3	22.74	32.4	46.28	31.0
26.2	6.96	40.8	27.83	50.9	50.91	59.8	22.56	32.2	46.10	31.0
Oct. 6.2	6.80	40.8	27.65	50.3	50.67	58.8	22.39	32.1	45.92	30.8
16.2	6.66	40.8	27.50	49.4	50.46	57.4	22.24	31.8	45.77	30.6
26.1	6.55	40.9	27.37	48.2	50.28	55.6	22.12	31.6	45.65	30.4
Nov. 5.1	6.49	41.0	27.28	46.7	50.14	53.3	22.04	31.3	45.57	30.2
15.1	6.47	41.3	27.23	44.9	50.04	50.7	22.01	31.1	45.53	30.0
25.0	6.49	41.7	27.24	42.9	50.00	47.8	22.03	30.9	45.55	29.9
Dec. 5.0	6.57	42.2	27.29	40.7	50.02	44.7	22.10	30.8	45.62	29.8
15.0	6.70	42.8	27.38	38.3	50.09	41.4	22.22	30.8	45.74	29.9
25.0	6.87	43.6	27.53	35.9	50.22	38.1	22.40	31.0	45.91	30.1
34.9	7.09	44.4	27.71	33.4	50.40	34.8	22.62	31.2	46.12	30.4

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Arz.		β Draconis.		α Ophiuchi.		ϵ Herculis.		ω Draconis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 17 22	° ' " -60 36	h m 17 28	° ' " 52 21	h m 17 30	° ' " +12 37	h m 17 36	° ' " +46 3	h m 17 37	° ' " +68 47
Jan. 1.0	43.05	20.4	18.60	67.2	37.56	36.1	49.62	16.5	25.76	59.9
10.9	43.43	18.8	18.80	63.6	37.75	33.8	49.80	13.1	25.98	56.3
20.9	43.87	17.4	19.06	60.3	37.97	31.6	50.03	9.8	26.31	52.9
30.9	44.37	16.3	19.37	57.4	38.22	29.5	50.31	6.9	26.73	49.8
Feb. 9.8	44.91	15.5	19.72	54.9	38.49	27.8	50.62	4.4	27.24	47.2
19.8	45.47	15.1	20.10	52.9	38.77	26.3	50.97	2.4	27.81	45.1
29.8	46.04	14.9	20.50	51.6	39.06	25.3	51.33	1.0	28.43	43.7
Mar. 10.8	46.62	15.1	20.92	50.9	39.36	24.6	51.70	0.2	29.07	42.9
20.7	47.20	15.6	21.33	50.8	39.65	24.4	52.07	0.0	29.72	42.8
30.7	47.76	16.4	21.73	51.4	39.93	24.6	52.43	0.5	30.35	43.4
Apr. 9.7	48.30	17.5	22.11	52.6	40.21	25.1	52.78	1.6	30.95	44.6
19.7	48.81	18.9	22.46	54.4	40.47	26.1	53.11	3.2	31.49	46.4
29.6	49.28	20.4	22.77	56.6	40.71	27.4	53.40	5.3	31.97	48.7
May 9.6	49.70	22.2	23.04	59.2	40.93	28.9	53.66	7.8	32.37	51.3
19.6	50.08	24.1	23.25	62.1	41.13	30.6	53.87	10.5	32.68	54.3
29.5	50.39	26.2	23.42	65.2	41.30	32.4	54.04	13.5	32.90	57.5
June 8.5	50.64	28.4	23.52	68.3	41.43	34.2	54.16	16.5	33.01	60.8
18.5	50.82	30.6	23.57	71.5	41.53	36.1	54.23	19.6	33.02	64.1
28.5	50.92	32.8	23.56	74.5	41.59	37.9	54.25	22.6	32.93	67.3
July 8.4	50.94	34.9	23.49	77.4	41.61	39.6	54.22	25.4	32.74	70.3
18.4	50.89	36.9	23.36	80.0	41.59	41.1	54.13	28.0	32.46	73.1
28.4	50.75	38.8	23.17	82.3	41.54	42.4	53.99	30.3	32.08	75.5
Aug. 7.4	50.55	40.4	22.94	84.2	41.45	43.5	53.81	32.2	31.63	77.6
17.3	50.29	41.7	22.67	85.7	41.32	44.4	53.58	33.8	31.11	79.2
27.3	49.98	42.6	22.36	86.8	41.17	45.0	53.32	34.9	30.54	80.4
Sept. 6.3	49.63	43.2	22.02	87.3	41.00	45.4	53.04	35.6	29.92	81.1
16.2	49.27	43.3	21.67	87.4	40.82	45.5	52.75	35.8	29.28	81.3
26.2	48.90	43.0	21.32	87.0	40.64	45.3	52.44	35.5	28.64	80.9
Oct. 6.2	48.55	42.3	20.98	86.0	40.46	44.8	52.15	34.7	28.00	80.1
16.2	48.21	41.2	20.66	84.6	40.30	44.1	51.88	33.4	27.40	78.7
26.1	47.97	39.8	20.38	82.7	40.17	43.0	51.63	31.6	26.85	76.8
Nov. 5.1	47.78	38.1	20.14	80.3	40.07	41.7	51.43	29.4	26.36	74.4
15.1	47.67	36.2	19.95	77.5	40.01	40.1	51.27	26.8	25.95	71.6
25.1	47.65	34.1	19.83	74.3	39.99	38.2	51.17	23.9	25.64	68.4
Dec 3.0	47.73	32.0	19.78	70.0	40.02	36.2	51.13	20.6	25.44	64.9
13.0	47.90	29.0	19.80	67.3	40.10	34.0	51.15	17.2	25.35	61.3
23.0	48.15	28.0	19.80	63.7	40.23	31.7	51.24	13.6	25.38	57.5
34.9	48.49	26.2	20.05	60.1	40.40	29.3	51.38	10.1	25.53	53.8

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

379

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Herculis.			ψ ² Draconis.			θ Herculis.			γ Draconis.			γ ² Sagittarii.		
	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion South.
	h	m	°	h	m	°	h	m	°	h	m	°	h	m	°
	17	42	+27 46	17	43	+72 11	17	53	+37 15	17	54	-51 29	17	59	-30 25
	s	"	"	s	"	"	s	"	"	s	"	"	s	"	"
Jan. 1.0	49.17	.17	26.3	30.31	.22	37.4	3.51	.16	43.7	25.58	.15	57.0	51.00	.21	29.7
10.9	49.34	.21	23.4	30.53	.35	33.8	3.67	.20	40.5	25.73	.22	53.4	51.21	.24	29.5
20.9	49.55	.25	20.6	30.88	.46	30.4	3.87	.25	37.4	25.95	.27	50.0	51.45	.28	29.3
30.9	49.80	.27	18.0	31.34	.57	27.3	4.12	.27	34.6	26.22	.32	46.9	51.73	.30	29.3
Feb. 9.9	50.07	.29	15.8	31.91	.65	24.6	4.39	.31	32.1	26.54	.36	44.3	52.03	.32	29.2
19.8	50.36	.30	14.0	32.56	.71	22.5	4.70	.32	30.1	26.90	.38	42.1	52.35	.34	29.3
29.8	50.66	.31	12.7	33.27	.75	20.9	5.02	.33	28.7	27.28	.40	40.5	52.69	.34	29.3
Mar. 10.8	50.97	.31	11.9	34.02	.75	20.1	5.35	.33	27.8	27.68	.40	39.5	53.03	.34	29.4
20.7	51.28	.30	11.6	34.77	.74	19.9	5.68	.33	27.5	28.08	.40	39.2	53.37	.34	29.5
30.7	51.58	.30	11.9	35.51	.70	20.4	6.01	.32	27.7	28.48	.39	39.5	53.71	.34	29.6
Apr. 9.7	51.88	.27	12.7	36.21	.64	21.5	6.33	.30	28.6	28.87	.36	40.5	54.05	.32	29.7
19.7	52.15	.26	13.9	36.85	.56	23.2	6.63	.29	30.0	29.23	.33	42.0	54.37	.31	29.8
29.6	52.41	.24	15.6	37.41	.47	25.4	6.92	.25	31.8	29.56	.30	44.0	54.68	.29	30.0
May 9.6	52.65	.20	17.6	37.88	.36	28.0	7.17	.22	34.1	29.86	.25	46.4	54.97	.27	30.2
19.6	52.85	.18	19.9	38.24	.25	30.9	7.39	.19	36.6	30.11	.20	49.2	55.24	.24	30.4
29.6	53.03	.13	22.3	38.49	.13	34.1	7.58	.14	39.3	30.31	.14	52.3	55.48	.21	30.7
June 8.5	53.16	.10	24.8	38.62	.01	37.4	7.72	.10	42.2	30.45	.08	55.4	55.69	.16	31.1
18.5	53.26	.05	27.3	38.63	.11	40.6	7.82	.05	45.1	30.53	.03	58.6	55.85	.13	31.6
28.5	53.31	.01	29.8	38.52	.23	43.8	7.87	.01	47.9	30.56	.03	61.8	55.98	.08	32.1
July 8.4	53.32	.03	32.1	38.29	.35	46.9	7.88	.05	50.6	30.53	.09	64.8	56.06	.03	32.7
18.4	53.29	.07	34.3	37.94	.45	49.6	7.83	.09	53.1	30.44	.15	67.6	56.09	.02	33.3
28.4	53.22	.11	36.2	37.49	.54	52.1	7.74	.13	55.3	30.29	.21	70.1	56.07	.06	33.9
Aug. 7.4	53.11	.15	37.8	36.95	.62	54.2	7.61	.17	57.3	30.08	.25	72.3	56.01	.11	34.5
17.3	52.96	.17	39.1	36.33	.69	55.9	7.44	.20	58.9	29.83	.28	74.1	55.90	.14	35.0
27.3	52.79	.20	40.0	35.64	.73	57.2	7.24	.21	60.1	29.55	.32	75.5	55.76	.17	35.5
Sept. 6.3	52.59	.22	40.6	34.91	.77	57.9	7.01	.25	60.9	29.23	.34	76.4	55.59	.18	35.8
16.3	52.37	.21	40.8	34.14	.78	58.2	6.76	.25	61.2	28.89	.35	76.8	55.41	.20	36.1
26.2	52.16	.22	40.6	33.36	.76	57.9	6.51	.25	61.1	28.54	.34	76.7	55.21	.19	36.2
Oct. 6.2	51.94	.19	40.0	32.60	.74	57.1	6.26	.23	60.6	28.20	.32	76.1	55.02	.18	36.1
16.2	51.75	.18	39.0	31.86	.68	55.8	6.03	.21	59.6	27.88	.30	75.0	54.84	.15	36.0
26.1	51.57	.14	37.6	31.18	.61	53.9	5.82	.18	58.1	27.58	.26	73.4	54.69	.12	35.7
Nov. 5.1	51.43	.10	35.9	30.57	.51	51.6	5.64	.14	56.3	27.32	.21	71.3	54.57	.08	35.3
15.1	51.33	.05	34.8	30.06	.40	48.9	5.50	.08	54.5	27.11	.15	68.8	54.49	.02	34.9
25.1	51.28	.00	31.4	29.66	.28	45.8	5.42	.03	51.3	26.96	.09	65.9	54.47	.03	34.5
Dec. 5.0	51.28	.05	28.7	29.38	.15	42.3	5.39	.02	48.4	26.87	.02	62.7	54.50	.08	34.0
15.0	51.33	.10	25.8	29.23	.01	38.7	5.41	.07	45.3	26.85	.05	59.2	54.58	.14	33.6
25.0	51.43	.14	22.9	29.22	.11	35.0	5.48	.13	42.1	26.90	.12	55.6	54.72	.14	33.2
35.0	51.57	.19	19.0	29.15	.11	31.3	5.61	.13	38.8	27.02	.12	52.0	54.90	.14	32.9

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

. APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Herculis.		μ Sagittarii.		η Serpentis.		λ Sagittarii.		χ Draconis.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m 18 3	° ' " +28 44	h m 18 8	° ' " -21 4	h m 18 16	° ' " -2 55	h m 18 22	° ' " -25 28	h m 18 22	° ' " +72 41
Jan. 1.0	54.91	57.7	13.04	58.4	30.54	22.5	14.87	22.2	38.94	35.5
11.0	55.05	54.8	13.22	58.7	30.70	23.8	15.04	22.2	39.03	31.8
20.9	55.24	52.0	13.44	59.0	30.89	25.2	15.26	22.2	39.27	28.2
30.9	55.47	49.4	13.70	59.4	31.11	26.5	15.50	22.2	39.64	24.9
Feb. 9.9	55.72	47.1	13.97	59.7	31.35	27.6	15.77	22.2	40.12	21.9
19.8	56.00	45.2	14.26	60.0	31.61	28.5	16.07	22.3	40.71	19.4
29.8	56.30	43.8	14.57	60.2	31.89	29.2	16.38	22.3	41.38	17.4
Mar. 10.8	56.60	42.9	14.88	60.4	32.17	29.7	16.70	22.2	42.10	16.1
20.8	56.91	42.5	15.20	60.5	32.46	29.9	17.02	22.2	42.86	15.4
30.7	57.22	42.7	15.51	60.4	32.75	29.8	17.35	22.0	43.63	15.4
Apr. 9.7	57.53	43.4	15.83	60.3	33.04	29.5	17.68	21.9	44.38	16.0
19.7	57.82	44.6	16.13	60.2	33.32	28.9	18.00	21.7	45.09	17.2
29.7	58.09	46.2	16.42	60.0	33.60	28.1	18.31	21.5	45.74	19.0
May 9.6	58.34	48.2	16.70	59.7	33.85	27.1	18.60	21.4	46.31	21.3
19.6	58.57	50.5	16.96	59.4	34.09	26.0	18.87	21.3	46.79	24.0
29.6	58.76	53.0	17.18	59.2	34.30	24.8	19.12	21.2	47.15	27.0
June 8.5	58.92	55.6	17.38	59.0	34.49	23.6	19.34	21.2	47.40	30.2
18.5	59.04	58.2	17.55	58.9	34.64	22.5	19.52	21.2	47.53	33.6
28.5	59.11	60.8	17.67	58.8	34.75	21.4	19.66	21.4	47.53	36.9
July 8.5	59.14	63.3	17.75	58.8	34.83	20.3	19.76	21.6	47.40	40.1
18.4	59.13	65.6	17.79	58.9	34.86	19.4	19.81	21.9	47.15	43.2
28.4	59.07	67.7	17.78	59.0	34.85	18.6	19.82	22.3	46.78	46.1
Aug. 7.4	58.97	69.5	17.73	59.2	34.81	17.9	19.78	22.7	46.31	48.6
17.4	58.84	71.0	17.64	59.4	34.72	17.4	19.70	23.1	45.74	50.8
27.3	58.67	72.1	17.51	59.6	34.60	17.0	19.58	23.5	45.08	52.6
Sept. 6.3	58.47	72.9	17.36	59.8	34.46	16.8	19.43	23.8	44.36	54.0
16.3	58.26	73.3	17.19	59.9	34.29	16.7	19.26	24.1	43.60	54.8
26.2	58.04	73.4	17.01	60.0	34.12	16.8	19.07	24.3	42.80	55.2
Oct. 6.2	57.82	73.0	16.83	60.1	33.95	17.0	18.88	24.4	42.00	55.0
16.2	57.62	72.1	16.66	60.2	33.78	17.4	18.70	24.5	41.21	54.3
26.2	57.43	70.9	16.52	60.2	33.64	17.9	18.55	24.4	40.46	53.1
Nov. 5.1	57.28	69.3	16.41	60.2	33.52	18.6	18.42	24.3	39.77	51.3
15.1	57.16	67.4	16.33	60.2	33.44	19.4	18.33	24.2	39.15	49.0
25.1	57.08	65.1	16.30	60.2	33.40	20.3	18.29	24.0	38.63	46.3
Dec. 5.1	57.06	62.5	16.32	60.3	33.40	21.4	18.30	23.9	38.23	43.3
15.0	57.08	59.7	16.39	60.5	33.45	22.7	18.36	23.7	37.95	39.9
25.0	57.16	56.8	16.51	60.7	33.54	24.0	18.46	23.0	37.82	36.3
35.0	57.28	53.8	16.67	60.9	33.68	25.3	18.62	23.5	37.82	32.6

FIXED STARS, 1908.

381

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Aquilæ.			ζ Pavonia.			α Lyrae. (Vega.)			β Lyrae.			γ Draconis.		
	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.
	h m	s	'	h m	s	'	h m	s	'	h m	s	'	h m	s	'
	18 30		8 18	18 32		71 30	18 33		+38 41	18 46		+33 15	18 49		+75 19
Jan. 1.0	9.59		31.5	10.59		26.7	47.03		52.0	38.66		20.2	16.26		34.3
11.0	9.74	.15	32.5	10.94	.35	24.1	47.14	.11	48.7	38.76	.10	17.2	16.25	.01	30.7
21.0	9.93	.19	33.5	11.41	.47	21.6	47.30	.16	45.6	38.90	.14	14.2	16.40	.15	27.1
30.9	10.14	.21	34.5	11.99	.58	19.4	47.50	.20	42.6	39.09	.19	11.4	16.71	.31	23.7
Feb. 9.9	10.38	.24	35.3	12.65	.66	17.4	47.74	.24	40.0	39.31	.22	8.9	17.17	.46	20.5
19.9	10.64	.26	36.0	13.38	.73	15.7	48.01	.27	37.8	39.56	.25	6.7	17.77	.60	17.8
29.8	10.91	.27	36.5	14.17	.79	14.4	48.31	.30	36.0	39.84	.28	5.0	18.48	.71	15.6
Mar. 10.8	11.20	.29	36.8	15.01	.84	13.4	48.63	.32	34.8	40.13	.29	3.8	19.27	.79	13.9
20.8	11.49	.29	36.9	15.87	.86	12.8	48.96	.33	34.2	40.44	.31	3.1	20.12	.85	12.9
30.8	11.79	.30	36.7	16.74	.87	12.6	49.30	.34	34.2	40.76	.32	3.0	21.00	.88	12.5
Apr. 9.7	12.09	.30	36.4	17.60	.86	12.7	49.63	.33	34.7	41.08	.32	3.5	21.88	.88	12.8
19.7	12.38	.29	35.8	18.44	.81	13.3	49.96	.33	35.9	41.40	.32	4.5	22.72	.84	13.7
29.7	12.66	.28	35.1	19.25	.76	14.2	50.27	.31	37.5	41.70	.30	6.0	23.51	.79	15.2
May 9.6	12.93	.27	34.3	20.01	.71	15.5	50.56	.29	39.6	41.99	.29	7.9	24.22	.71	17.2
19.6	13.18	.25	33.3	20.70	.69	17.1	50.82	.26	42.0	42.25	.26	10.2	24.83	.61	19.7
29.6	13.41	.23	32.4	21.32	.62	19.0	51.05	.23	44.7	42.48	.23	12.8	25.32	.49	22.6
June 8.6	13.62	.21	31.4	21.85	.53	21.1	51.24	.19	47.6	42.68	.20	15.5	25.68	.36	25.7
18.5	13.79	.17	30.5	22.28	.43	23.5	51.39	.15	50.6	42.84	.16	18.3	25.89	.21	29.0
28.5	13.92	.13	29.6	22.59	.31	26.0	51.48	.09	53.6	42.96	.12	21.2	25.96	.07	32.4
July 8.5	14.01	.09	28.8	22.78	.19	28.6	51.53	.05	56.5	43.03	.07	24.0	25.88	.08	35.7
18.5	14.06	.05	28.1	22.85	.07	31.2	51.53	.00	59.3	43.05	.02	26.7	25.88	.23	38.3
28.4	14.07	.01	27.6	22.78	.07	33.7	51.48	.05	61.9	43.02	.03	29.2	25.28	.37	41.0
Aug. 7.4	14.03	.04	27.1	22.60	.18	36.1	51.38	.10	64.2	42.95	.07	31.4	24.78	.50	44.8
17.4	13.96	.07	26.8	22.30	.30	38.3	51.23	.15	66.2	42.83	.12	33.3	24.16	.62	47.3
27.4	13.85	.11	26.6	21.90	.40	40.1	51.04	.19	67.8	42.68	.15	34.9	23.43	.73	49.5
Sept. 6.3	13.72	.13	26.5	21.42	.48	42.9	50.83	.21	69.0	42.49	.19	36.2	22.62	.81	51.2
16.3	13.56	.16	26.5	20.87	.55	44.6	50.59	.24	69.8	42.27	.22	37.0	22.62	.88	52.5
26.3	13.39	.17	26.6	20.28	.59	46.3	50.33	.26	70.2	42.04	.23	37.5	21.74	.91	53.3
Oct. 6.2	13.22	.17	26.8	19.68	.60	48.0	50.07	.26	70.1	41.81	.23	37.5	20.80	.95	54.3
16.2	13.05	.17	27.1	19.10	.58	50.0	49.82	.25	69.6	41.58	.23	37.1	19.85	.95	55.6
26.2	12.90	.15	27.4	18.57	.53	52.0	49.58	.24	69.0	41.36	.22	36.2	18.90	.93	56.3
Nov. 5.2	12.78	.12	27.9	18.10	.47	54.1	49.37	.21	67.0	41.17	.19	34.9	17.97	.88	57.5
15.1	12.60	.09	28.5	17.73	.37	56.2	49.20	.17	65.1	41.01	.16	33.2	17.09	.88	58.8
25.1	12.65	.04	29.1	17.47	.26	58.3	49.07	.13	62.8	40.88	.13	31.1	16.29	.70	60.1
Dec. 5.1	12.64	.01	29.9	17.35	.12	60.4	48.99	.08	60.2	40.80	.08	28.7	15.59	.58	61.4
15.0	12.68	.04	30.5	17.35	.00	62.5	48.96	.03	60.2	40.80	.02	28.7	15.01	.44	62.7
25.0	12.77	.09	31.7	17.50	.15	64.6	48.98	.02	54.1	40.80	.02	23.1	14.28	.29	64.0
35.0	12.89	.12	32.7	17.78	.28	66.7	49.06	.08	50.9	40.87	.07	20.1	14.16	.12	65.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	σ Sagittarii.		γ Lyrae.		ζ Aquilæ.		ϵ Lyrae.		δ Sagittarii.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 18 49	° ' " -26 24	h m 18 55	° ' " +32 33	h m 19 1	° ' " +13 43	h m 19 3	° ' " +35 57	h m 19 12	° ' " -19 6
Jan. 1.0	30.88	42.4	27.80	47.2	8.61	34.4	58.82	20.6	12.57	63.6
11.0	31.03	42.2	27.88	44.2	8.71	32.2	58.89	17.5	12.69	63.8
21.0	31.22	42.0	28.01	41.3	8.84	30.1	59.01	14.5	12.84	64.0
30.9	31.44	41.8	28.19	38.5	9.02	28.1	59.18	11.6	13.03	64.1
Feb. 9.9	31.69	41.6	28.40	36.0	9.22	26.3	59.38	8.9	13.25	64.2
19.9	31.97	41.4	28.64	33.8	9.44	24.8	59.62	6.6	13.49	64.1
29.9	32.27	41.2	28.91	32.1	9.69	23.6	59.89	4.7	13.76	64.0
Mar. 10.8	32.58	40.9	29.20	30.8	9.96	22.8	60.18	3.4	14.04	63.8
20.8	32.90	40.6	29.51	30.1	10.24	22.4	60.49	2.6	14.34	63.5
30.8	33.22	40.2	29.82	30.0	10.52	22.4	60.82	2.3	14.64	63.0
Apr. 9.7	33.56	39.9	30.14	30.4	10.81	22.9	61.15	2.7	14.95	62.5
19.7	33.89	39.5	30.46	31.4	11.10	23.7	61.47	3.6	15.27	61.8
29.7	34.21	39.1	30.76	32.8	11.39	24.9	61.79	5.0	15.58	61.1
May 9.7	34.52	38.8	31.05	34.7	11.67	26.4	62.09	6.9	15.89	60.4
19.6	34.82	38.5	31.32	36.9	11.93	28.2	62.37	9.1	16.18	59.7
29.6	35.09	38.3	31.56	39.4	12.17	30.1	62.63	11.7	16.46	59.0
June 8.6	35.33	38.2	31.77	42.1	12.38	32.2	62.84	14.4	16.70	58.4
18.6	35.54	38.1	31.94	44.9	12.56	34.3	63.02	17.4	16.92	57.9
28.5	35.71	38.2	32.07	47.8	12.70	36.5	63.15	20.3	17.10	57.5
July 8.5	35.84	38.5	32.15	50.6	12.80	38.5	63.24	23.3	17.24	57.2
18.5	35.92	38.8	32.18	53.3	12.86	40.4	63.28	26.1	17.34	57.0
28.4	35.95	39.2	32.16	55.8	12.88	42.2	63.26	28.8	17.39	56.9
Aug. 7.4	35.93	39.6	32.10	58.1	12.86	43.8	63.20	31.2	17.40	57.0
17.4	35.87	40.1	31.99	60.0	12.79	45.1	63.09	33.4	17.36	57.2
27.4	35.77	40.6	31.84	61.7	12.68	46.2	62.94	35.2	17.28	57.4
Sept. 6.3	35.63	41.1	31.66	63.0	12.55	47.1	62.75	36.6	17.16	57.7
16.3	35.47	41.5	31.45	63.9	12.39	47.6	62.53	37.7	17.02	58.0
26.3	35.29	41.9	31.23	64.4	12.21	47.9	62.30	38.4	16.85	58.3
Oct. 6.3	35.10	42.1	31.00	64.5	12.02	47.9	62.05	38.6	16.67	58.6
16.2	34.92	42.3	30.77	64.2	11.84	47.6	61.81	38.3	16.50	58.9
26.2	34.75	42.3	30.55	63.4	11.67	47.0	61.58	37.6	16.34	59.1
Nov. 5.2	34.61	42.3	30.36	62.2	11.52	46.1	61.37	36.5	16.20	59.4
15.1	34.50	42.2	30.19	60.6	11.40	44.9	61.19	34.9	16.08	59.6
25.1	34.44	42.0	30.07	58.6	11.31	43.4	61.04	32.9	16.00	59.8
Dec. 5.1	34.42	41.8	29.98	56.3	11.26	41.8	60.94	30.5	15.97	60.0
15.1	34.45	41.6	29.95	53.6	11.25	39.0	60.88	27.9	15.98	60.1
25.0	34.53	41.4	29.96	50.8	11.28	37.8	60.88	25.0	16.03	60.3
35.0	34.65	41.1	30.02	47.9	11.36	35.7	60.93	21.9	16.12	60.5

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

383

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Draconis.			σ Octanis.			θ Lyræ.			τ Draconis.			δ Aquilæ.		
	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.
	h m	s	°	h m	s	°	h m	s	°	h m	s	°	h m	s	°
	19 12		+67 29	19		-89 14	19 13		+37 57	19 17		+73 10	19 20		+ 2 55
Jan. 1.0	28.83		61.9	10 51.3		33.3	8.12		71.8	15.67		69.2	49.28		50.1
11.0	28.80	.03	58.3	10 54.6	3.3	29.9	8.18	.06	68.7	15.58	.09	65.7	49.37	.09	48.6
21.0	28.88	.08	54.7	11 1.0	6.4	26.6	8.29	.11	65.6	15.63	.05	62.1	49.50	.13	47.1
30.9	29.07	.19	51.2	11 10.2	9.2	23.5	8.44	.20	62.7	15.83	.33	58.6	49.66	.19	45.7
Feb. 9.9	29.36	.29	48.0	11 22.0	11.8	20.6	8.64	.23	59.9	16.16	.46	55.3	49.85	.21	44.5
19.9	29.74		45.1	11 36.0		18.0	8.87		57.5	16.62		52.4	50.06		43.5
29.9	30.19	.45	42.7	11 51.8	15.8	15.8	9.14	.27	55.6	17.18	.56	49.9	50.30	.24	42.7
Mar. 10.8	30.71	.52	40.8	12 9.1	17.3	14.0	9.43	.29	54.1	17.83	.65	47.9	50.55	.25	42.2
20.8	31.27	.56	39.5	12 27.5	18.4	12.7	9.74	.31	53.2	18.55	.72	46.6	50.82	.27	42.1
30.8	31.86	.61	38.9	12 46.5	19.3	11.8	10.07	.34	52.9	19.31	.77	45.9	51.10	.29	42.2
Apr. 9.8	32.47		38.9	13 5.8		11.4	10.41		53.1	20.08		45.8	51.39		42.7
19.7	33.07	.60	39.6	13 24.9	19.1	11.5	10.74	.33	54.0	20.85	.77	46.4	51.69	.30	43.5
29.7	33.64	.57	40.9	13 43.4	18.5	12.1	11.07	.33	55.3	21.59	.74	47.6	51.98	.29	44.6
May 9.7	34.17	.53	42.8	14 1.1	17.7	13.1	11.38	.39	57.2	22.27	.68	49.4	52.26	.28	45.9
19.6	34.65	.41	45.1	14 17.4	16.3	14.6	11.67	.26	59.4	22.87	.51	51.6	52.54	.25	47.4
29.6	35.06		47.9	14 32.2		16.5	11.93		62.0	23.38		54.3	52.79		49.0
June 8.6	35.38	.32	51.0	14 45.0	12.8	18.8	12.16	.23	64.8	23.79	.41	57.3	53.02	.23	50.7
18.6	35.62	.24	54.2	14 55.5	10.5	21.3	12.35	.19	67.7	24.07	.28	60.5	53.23	.21	52.3
28.5	35.76	.14	57.6	15 3.5	8.0	24.2	12.49	.14	70.8	24.23	.16	63.9	53.39	.13	54.0
July 8.5	35.80	.05	61.1	15 8.8	5.3	27.2	12.59	.04	73.8	24.26	.10	67.3	53.52	.09	55.6
18.5	35.75	.16	64.5	15 11.2		30.3	12.63		76.7	24.16		70.7	53.61		57.0
28.5	35.59	.25	67.7	15 10.7	0.5	33.4	12.62	.01	79.5	23.94	.22	74.0	53.66	.05	58.3
Aug. 7.4	35.34	.33	70.8	15 7.3	3.4	36.4	12.56	.06	82.0	23.59	.33	77.1	53.66	.00	59.4
17.4	35.01	.42	73.6	15 1.1	6.2	39.3	12.45	.11	84.3	23.13	.46	79.9	53.62	.04	60.4
27.4	34.59	.48	76.0	14 52.2	11.2	41.8	12.30	.19	86.3	22.56	.65	82.4	53.54	.12	61.2
Sept. 6.3	34.11		78.0	14 41.0		44.0	12.11		87.9	21.91		84.6	53.42		61.7
16.3	33.57	.54	79.6	14 27.9	13.1	45.7	11.89	.22	89.1	21.18	.73	86.3	53.28	.14	62.0
26.3	33.00	.57	80.7	14 13.4	14.5	46.8	11.65	.24	89.9	20.40	.78	87.5	53.12	.16	62.2
Oct. 6.3	32.40	.60	81.3	13 57.9	15.5	47.4	11.40	.25	90.2	19.59	.81	88.2	52.95	.17	62.1
16.2	31.79	.59	81.4	13 42.2	15.3	47.4	11.15	.24	90.0	18.77	.82	88.4	52.78	.16	61.9
26.2	31.20		80.9	13 26.9		46.7	10.91		89.4	17.95		88.0	52.62		61.4
Nov. 5.2	30.63	.57	79.9	13 12.6	14.3	45.4	10.68	.23	88.4	17.17	.78	87.1	52.48	.14	60.8
15.2	30.11	.52	78.3	12 59.9	12.7	43.6	10.49	.19	86.9	16.44	.73	85.6	52.36	.12	59.9
25.1	29.65	.46	76.2	12 49.4	10.5	41.3	10.33	.16	84.9	15.78	.66	83.7	52.27	.09	58.9
Dec. 5.1	29.27	.30	73.6	12 41.4	5.1	38.5	10.21	.06	82.6	15.22	.45	81.2	52.22	.01	57.8
15.1	28.97		70.7	12 36.3		35.4	10.15		79.9	14.77		78.3	52.21		56.5
25.0	28.77	.20	67.4	12 34.4	1.9	32.2	10.13	.02	77.0	14.45	.32	75.1	52.24	.03	55.1
35.0	28.68	.09	63.9	12 35.7	1.3	28.8	10.16	.03	74.0	14.27	.18	71.7	52.31	.07	53.6

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Cygni.		κ Aquilæ.		β Sagittæ.		γ Aquilæ.		δ Cygni.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 19 26	° ' " +27 45	h m 19 31	° ' " 7 13	h m 19 36	° ' " -17 15	h m 19 41	° ' " +10 23	h m 19 42	° ' " +44 54
Jan. 1.0	58.40	.06 58.5	54.19	.08 58.8	52.77	.06 44.8	50.91	.06 18.1	3.64	.01 23.7
11.0	58.46	.10 55.8	54.27	.08 59.7	52.83	.10 42.6	50.97	.10 16.3	3.65	.07 20.5
21.0	58.56	.14 53.1	54.39	.16 60.5	52.93	.13 40.4	51.07	.13 14.5	3.72	.11 17.3
31.0	58.70	.18 50.5	54.55	.19 61.3	53.06	.17 38.3	51.20	.17 12.7	3.83	.17 14.2
Feb. 9.9	58.88	.21 48.1	54.74	.21 61.9	53.23	.20 36.4	51.37	.19 11.1	4.00	.21 11.2
19.9	59.09	.24 46.0	54.95	.23 62.4	53.43	.22 34.7	51.56	.22 9.8	4.21	.25 8.5
29.9	59.33	.26 44.3	55.18	.26 62.7	53.65	.25 33.4	51.78	.24 8.7	4.46	.29 6.2
Mar. 10.9	59.59	.28 43.0	55.44	.27 62.8	53.90	.26 32.4	52.02	.26 8.0	4.75	.32 4.4
20.8	59.87	.30 42.2	55.71	.28 62.7	54.16	.28 31.8	52.28	.28 7.6	5.07	.35 3.1
30.8	60.17	.30 41.9	55.99	.30 62.3	54.44	.29 31.7	52.56	.28 7.6	5.42	.36 2.5
Apr. 9.8	60.47	.31 42.2	56.29	.30 61.7	54.73	.30 32.1	52.84	.30 8.0	5.78	.36 2.4
19.7	60.78	.31 43.0	56.59	.30 60.9	55.03	.30 32.8	53.14	.29 8.8	6.14	.36 3.0
29.7	61.09	.30 44.2	56.89	.29 59.9	55.33	.29 34.0	53.43	.29 9.9	6.50	.35 4.1
May 9.7	61.39	.29 45.9	57.18	.29 58.8	55.62	.28 35.5	53.72	.28 11.4	6.85	.33 5.8
19.7	61.68	.26 47.9	57.47	.27 57.6	55.90	.26 37.4	54.00	.27 13.1	7.18	.31 7.9
29.6	61.94	.23 50.2	57.74	.24 56.3	56.16	.24 39.4	54.27	.24 14.9	7.49	.27 10.4
June 8.6	62.17	.20 52.8	57.98	.22 55.1	56.40	.21 41.6	54.51	.22 16.9	7.76	.22 13.2
18.6	62.37	.16 55.5	58.20	.19 53.9	56.61	.17 43.9	54.73	.18 19.0	7.98	.18 16.3
28.6	62.53	.12 58.2	58.39	.15 52.7	56.78	.14 46.3	54.91	.14 21.0	8.16	.12 19.5
July 8.5	62.65	.07 60.9	58.54	.10 51.6	56.92	.09 48.6	55.05	.10 23.0	8.28	.07 22.7
18.5	62.72	.02 63.5	58.64	.06 50.7	57.01	.04 50.8	55.15	.06 24.9	8.35	.01 25.9
28.5	62.74	.02 66.0	58.70	.02 50.0	57.05	.00 52.9	55.21	.01 26.7	8.36	.05 29.0
Aug. 7.4	62.72	.07 68.3	58.72	.08 49.4	57.05	.04 54.8	55.22	.03 28.3	8.31	.10 31.9
17.4	62.65	.11 70.3	58.70	.08 48.9	57.01	.08 56.4	55.19	.07 29.6	8.21	.15 34.6
27.4	62.54	.14 72.1	58.63	.10 48.6	56.93	.12 57.8	55.12	.10 30.8	8.06	.19 37.0
Sept. 6.4	62.40	.18 73.5	58.53	.13 48.4	56.81	.15 59.0	55.02	.14 31.7	7.87	.23 39.1
16.3	62.22	.20 74.6	58.40	.15 48.4	56.66	.17 59.8	54.88	.16 32.3	7.64	.26 40.7
26.3	62.02	.21 75.3	58.25	.17 48.5	56.49	.18 60.4	54.72	.17 32.7	7.38	.28 41.9
Oct. 6.3	61.81	.21 75.6	58.08	.17 48.7	56.31	.19 60.6	54.55	.18 32.8	7.10	.29 42.7
16.3	61.60	.20 75.6	57.91	.16 49.0	56.12	.18 60.5	54.37	.17 32.7	6.81	.28 42.9
26.2	61.40	.19 75.1	57.75	.14 49.3	55.94	.16 60.1	54.20	.15 32.3	6.53	.27 42.7
Nov. 5.2	61.21	.17 74.2	57.61	.12 49.8	55.78	.15 59.4	54.05	.13 31.6	6.26	.24 42.0
15.2	61.04	.13 73.0	57.49	.09 50.4	55.63	.11 58.3	53.92	.11 30.7	6.02	.21 40.7
25.1	60.91	.10 71.3	57.40	.05 51.0	55.52	.08 57.0	53.81	.07 29.6	5.81	.17 39.0
Dec. 5.1	60.81	.05 69.4	57.35	.01 51.7	55.44	.04 55.4	53.74	.04 28.2	5.64	.13 36.8
15.1	60.76	.01 67.1	57.34	.03 52.5	55.40	.00 53.5	53.70	.00 26.7	5.51	.08 34.3
25.1	60.75	.03 64.6	57.37	.06 53.3	55.40	.04 51.5	53.70	.04 25.0	5.43	.02 31.5
35.0	60.78	.03 62.0	57.43	.06 54.2	55.44	.04 49.3	53.74	.04 23.2	5.41	.02 28.4

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

385

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Aquilæ. (Altair.)		ϵ Draconis.		ϵ Pavonis.		β Aquilæ.		γ Sagittæ.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 19 46	° ' " + 8 37	h m 19 48	° ' " + 70 1	h m 19 49	° ' " - 73 8	h m 19 50	° ' " + 6 10	h m 19 54	° ' " + 19 14
Jan. 1.1	15.44	.06	25.93	.14	50.78	.11	45.41	.05	37.73	.04
11.0	15.50	.10	25.79	.02	50.89	.25	45.46	.10	37.77	.08
21.0	15.60	.13	25.77	.09	51.14	.38	45.56	.13	37.85	.11
31.0	15.73	.16	25.86	.21	51.52	.50	45.69	.16	37.96	.15
Feb. 9.9	15.89	.19	26.07	.32	52.02	.60	45.85	.18	38.11	.18
19.9	16.08	.22	26.39	.42	52.62	.69	46.03	.21	38.29	.21
29.9	16.30	.24	26.81	.51	53.31	.77	46.24	.24	38.50	.24
Mar. 10.9	16.54	.26	27.32	.58	54.08	.83	46.48	.26	38.74	.26
20.8	16.80	.27	27.90	.63	54.91	.88	46.74	.27	39.00	.27
30.8	17.07	.29	28.53	.66	55.79	.91	47.01	.28	39.27	.29
Apr. 9.8	17.36	.29	29.19	.67	56.70	.93	47.29	.29	39.56	.30
19.8	17.65	.29	29.86	.65	57.63	.93	47.58	.30	39.86	.30
29.7	17.94	.30	30.51	.63	58.56	.91	47.88	.30	40.16	.30
May 9.7	18.24	.28	31.14	.58	59.47	.88	48.17	.29	40.46	.29
19.7	18.52	.27	31.72	.51	60.35	.82	48.46	.27	40.75	.27
29.6	18.79	.25	32.23	.43	61.17	.75	48.73	.25	41.02	.26
June 8.6	19.04	.22	32.66	.34	61.92	.66	48.98	.22	41.28	.22
18.6	19.26	.18	33.00	.24	62.58	.56	49.20	.19	41.50	.19
28.6	19.44	.15	33.24	.13	63.14	.43	49.39	.16	41.69	.15
July 8.5	19.59	.11	33.37	.02	63.57	.31	49.55	.11	41.84	.11
18.5	19.70	.07	33.39	.09	63.88	.17	49.66	.07	41.95	.06
28.5	19.77	.02	33.30	.20	64.05	.02	49.73	.02	42.01	.01
Aug. 7.5	19.79	.03	33.10	.30	64.07	.11	49.75	.01	42.02	.03
17.4	19.76	.06	32.80	.40	63.96	.25	49.74	.06	41.99	.07
27.4	19.70	.10	32.40	.48	63.71	.37	49.68	.10	41.92	.11
Sept. 6.4	19.60	.13	31.92	.55	63.34	.48	49.58	.13	41.81	.14
16.3	19.47	.15	31.37	.61	62.86	.56	49.45	.14	41.67	.16
26.3	19.32	.17	30.76	.65	62.30	.62	49.31	.17	41.51	.18
Oct. 6.3	19.15	.17	30.11	.67	61.68	.65	49.14	.17	41.33	.19
16.3	18.98	.17	29.44	.68	61.03	.65	48.97	.16	41.14	.18
26.2	18.81	.15	28.76	.66	60.38	.61	48.81	.16	40.96	.17
Nov. 5.2	18.66	.14	28.10	.63	59.77	.56	48.65	.13	40.79	.15
15.2	18.52	.10	27.47	.58	59.21	.47	48.52	.10	40.64	.13
25.2	18.42	.07	26.89	.51	58.74	.36	48.42	.08	40.51	.10
Dec. 5.1	18.35	.04	26.38	.42	58.38	.24	48.34	.04	40.41	.05
15.1	18.31	.00	25.96	.32	58.14	.10	48.30	.00	40.36	.02
25.1	18.31	.04	25.64	.22	58.04	.03	48.30	.04	40.34	.02
35.0	18.35	.04	25.42	.22	58.07	.03	48.34	.04	40.36	.02

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♐ Sagittarii.		♏ Aquilæ.		♏ Aquilæ.		♏ Cygni.		♏ Cephei (pr.).	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 19 56	° ' " -27 57	h m 19 59	° ' " + 7 0	h m 20 6	° ' " - 1 5	h m 20 10	° ' " +46 27	h m 20 11	° ' " +77 25
Jan. 1.1	57.47	08	57.53	05	58.24	05	41.80	03	55.54	3.2
11.0	57.55	08	58.05	05	58.34	05	41.77	03	55.15	3.2
21.0	57.66	08	58.16	05	58.44	05	41.79	02	54.95	3.4
31.0	57.81	08	58.31	05	58.59	05	41.86	07	54.93	3.5
Feb. 10.0	58.00	08	58.50	05	59.18	05	41.99	13	55.11	3.4
19.9	58.22	08	59.11	05	59.46	05	42.17	18	55.47	3.2
29.9	58.47	08	59.36	05	59.75	05	42.40	23	56.00	3.0
Mar. 10.9	58.74	08	59.63	05	60.02	05	42.67	27	56.68	2.5
20.8	59.03	08	59.92	05	60.30	05	42.97	30	57.49	2.0
30.8	59.34	08	60.21	05	60.58	05	43.30	33	58.40	1.4
Apr. 9.8	59.67	08	60.50	05	61.17	05	43.66	36	59.37	0.8
19.8	60.00	08	60.83	05	61.49	05	44.03	37	60.37	0.2
29.7	60.34	08	61.17	05	61.81	05	44.40	37	61.38	0.5
May 9.7	60.68	08	61.50	05	62.13	05	44.77	36	62.34	1.1
19.7	61.02	08	61.84	05	62.45	05	45.13	33	63.24	1.7
29.7	61.34	08	62.16	05	62.77	05	45.46	27	64.04	2.6
June 8.6	61.63	08	62.45	05	63.08	05	45.76	27	64.73	3.0
18.6	61.90	08	62.72	05	63.35	05	46.02	26	65.28	3.5
28.6	62.14	08	62.96	05	63.59	05	46.23	21	65.68	3.2
July 8.5	62.34	08	63.16	05	64.19	05	46.39	16	65.92	3.4
18.5	62.49	08	63.31	05	64.34	05	46.50	11	65.98	3.5
28.5	62.59	08	63.41	05	64.44	05	46.54	04	65.88	3.5
Aug. 7.5	62.64	08	63.46	05	64.49	05	46.53	01	65.61	3.3
17.4	62.64	08	63.46	05	64.49	05	46.46	07	65.19	3.0
27.4	62.59	08	63.41	05	64.44	05	46.34	12	64.61	2.8
Sept. 6.4	62.50	08	63.32	05	64.35	05	46.17	17	63.89	2.5
16.4	62.38	08	63.20	05	64.23	05	45.95	22	63.06	2.0
26.3	62.22	08	63.04	05	64.07	05	45.71	24	62.13	1.6
Oct. 6.3	62.05	08	62.87	05	63.90	05	45.44	27	61.12	1.1
16.3	61.86	08	62.68	05	63.71	05	45.15	29	60.05	0.6
26.2	61.68	08	62.50	05	63.53	05	44.86	28	58.96	0.0
Nov. 5.2	61.52	08	62.34	05	63.37	05	44.58	26	57.87	0.6
15.2	61.38	08	62.18	05	63.21	05	44.32	24	56.81	1.1
25.2	61.27	08	62.07	05	63.10	05	44.08	20	55.81	1.7
Dec. 5.1	61.19	08	62.00	05	63.02	05	43.88	16	54.90	2.2
15.1	61.16	08	61.97	05	62.97	05	43.72	12	54.10	2.6
25.1	61.17	08	61.98	05	62.98	05	43.60	06	53.43	3.0
35.1	61.22	08	62.03	05	63.03	05	43.54	00	52.93	3.0

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

387

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α^2 Capricorni.		α Pavonis.		γ Cygni.		π Capricorni.		ϵ Delphini.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m 20 12	° ' " -12 49	h m 20 18	° ' " -57 1	h m 20 18	° ' " +39 57	h m 20 22	° ' " -18 30	h m 20 28	° ' " +10 59
	s	"	s	"	s	"	s	"	s	"
Jan. 1.1	54.69	54.2	18.47	59.2	53.36	45.7	0.94	55.0	46.94	23.1
11.0	54.74	54.6	18.52	57.1	53.34	42.8	0.99	55.1	46.96	21.4
21.0	54.83	54.9	18.64	54.8	53.36	39.9	1.07	55.0	47.01	19.7
31.0	54.95	55.2	18.82	52.5	53.43	36.9	1.19	54.9	47.10	18.1
Feb. 10.0	55.10	55.4	19.07	50.1	53.55	34.0	1.34	54.7	47.22	16.5
19.9	55.28	55.4	19.37	47.8	53.71	31.4	1.52	54.4	47.37	15.2
29.9	55.49	55.3	19.72	45.6	53.92	29.1	1.72	53.9	47.55	14.1
Mar. 10.9	55.72	55.0	20.11	43.5	54.16	27.2	1.95	53.4	47.76	13.3
20.9	55.98	54.5	20.54	41.6	54.44	25.8	2.21	52.6	47.99	12.9
30.8	56.25	53.9	21.00	39.9	54.74	25.0	2.49	51.8	48.24	12.9
Apr. 9.8	56.54	53.1	21.49	38.5	55.06	24.7	2.78	50.8	48.51	13.2
19.8	56.84	52.1	22.00	37.3	55.40	25.0	3.09	49.7	48.80	13.9
29.7	57.15	51.0	22.52	36.4	55.75	25.9	3.41	48.5	49.10	15.0
May 9.7	57.46	49.8	23.05	35.9	56.09	27.3	3.73	47.4	49.40	16.4
19.7	57.77	48.5	23.56	35.7	56.43	29.1	4.04	46.2	49.70	18.1
29.7	58.06	47.3	24.06	35.8	56.75	31.4	4.35	45.1	49.99	20.0
June 8.6	58.34	46.1	24.52	36.3	57.04	34.0	4.65	44.0	50.26	22.0
18.6	58.60	44.9	24.95	37.2	57.29	36.9	4.92	43.1	50.51	24.1
28.6	58.82	43.9	25.32	38.3	57.51	39.9	5.16	42.3	50.73	26.3
July 8.6	59.01	43.0	25.64	39.8	57.68	43.1	5.36	41.7	50.91	28.4
18.5	59.16	42.3	25.88	41.5	57.80	46.2	5.52	41.3	51.06	30.5
28.5	59.27	41.7	26.05	43.4	57.87	49.3	5.64	41.0	51.16	32.4
Aug. 7.5	59.33	41.3	26.15	45.4	57.88	52.3	5.71	41.0	51.21	34.1
17.4	59.34	41.1	26.16	47.5	57.84	55.1	5.74	41.1	51.22	35.7
27.4	59.31	41.1	26.10	49.6	57.75	57.6	5.72	41.3	51.19	37.0
Sept. 6.4	59.24	41.2	25.96	51.6	57.61	59.8	5.65	41.6	51.12	38.1
16.4	59.13	41.3	25.76	53.4	57.43	61.6	5.55	42.1	51.02	39.0
26.3	59.00	41.6	25.51	55.0	57.23	63.1	5.42	42.6	50.89	39.6
Oct. 6.3	58.85	42.0	25.22	56.2	57.00	64.2	5.27	43.1	50.74	39.9
16.3	58.69	42.4	24.91	57.1	56.75	64.8	5.10	43.6	50.57	40.0
26.3	58.53	42.8	24.59	57.6	56.50	64.9	4.94	44.1	50.41	39.8
Nov. 5.2	58.37	43.2	24.29	57.6	56.26	64.6	4.79	44.5	50.25	39.3
15.2	58.24	43.7	24.01	57.2	56.04	63.7	4.65	44.9	50.10	38.6
25.2	58.13	44.2	23.77	56.4	55.83	62.5	4.53	45.2	49.97	37.7
Dec. 5.1	58.06	44.6	23.58	55.2	55.66	60.7	4.45	45.5	49.87	36.5
15.1	58.01	45.1	23.45	53.7	55.53	58.6	4.40	45.7	49.81	35.2
25.1	58.01	45.6	23.39	51.9	55.44	56.1	4.39	45.9	49.77	33.6
35.1	58.04	46.0	23.40	49.8	55.39	53.4	4.41	46.0	49.77	32.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	Groombridge 3241.		α Delphini.		β Pavonis.		α Cygni.		ψ Capricorni.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 20 30	° ' " +72 12	h m 20 35	° ' " +15 35	h m 20 36	° ' " -66 31	h m 20 38	° ' " +44 56	h m 20 40	° ' " -25 35
Jan. 1.1	21.16	79.1	19.80	13.6	35.66	76.0	15.51	68.6	36.53	74.3
11.1	20.86	76.0	19.81	11.7	35.65	73.4	15.45	65.8	36.56	73.9
21.0	20.69	72.6	19.85	9.8	35.74	70.6	15.44	62.8	36.62	73.4
31.0	20.66	69.2	19.93	7.9	35.92	67.8	15.48	59.7	36.72	72.8
Feb. 10.0	20.75	65.7	20.04	6.2	36.18	64.9	15.57	56.7	36.86	72.1
19.9	20.98	62.4	20.18	4.6	36.52	62.1	15.71	53.9	37.03	71.3
29.9	21.32	59.4	20.35	3.3	36.94	59.4	15.90	51.4	37.23	70.4
Mar. 10.9	21.78	56.8	20.56	2.3	37.43	56.9	16.13	49.3	37.46	69.4
20.9	22.34	54.7	20.79	1.7	37.97	54.6	16.40	47.6	37.71	68.3
30.8	22.98	53.1	21.04	1.5	38.56	52.5	16.71	46.5	37.99	67.1
Apr. 9.8	23.67	52.2	21.31	1.7	39.19	50.7	17.05	46.0	38.29	65.8
19.8	24.40	51.8	21.60	2.3	39.85	49.3	17.40	46.0	38.61	64.5
29.8	25.14	52.1	21.90	3.4	40.53	48.3	17.77	46.6	38.94	63.3
May 9.7	25.86	53.1	22.20	4.8	41.22	47.7	18.14	47.8	39.27	62.1
19.7	26.55	54.6	22.50	6.5	41.90	47.4	18.50	49.5	39.61	60.9
29.7	27.19	56.7	22.79	8.4	42.56	47.6	18.85	51.7	39.94	59.8
June 8.6	27.75	59.2	23.07	10.5	43.19	48.2	19.17	54.3	40.26	58.9
18.6	28.22	62.1	23.32	12.8	43.76	49.2	19.45	57.1	40.55	58.2
28.6	28.59	65.2	23.55	15.1	44.27	50.6	19.70	60.2	40.82	57.7
July 8.6	28.85	68.6	23.73	17.5	44.70	52.4	19.89	63.4	41.05	57.4
18.5	28.98	72.2	23.88	19.8	45.05	54.4	20.03	66.7	41.24	57.3
28.5	29.00	75.7	23.99	21.9	45.30	56.7	20.12	69.9	41.38	57.4
Aug. 7.5	28.90	79.2	24.05	23.9	45.44	59.1	20.15	73.1	41.48	57.7
17.5	28.67	82.6	24.06	25.7	45.48	61.5	20.12	76.1	41.52	58.2
27.4	28.34	85.9	24.03	27.3	45.41	64.0	20.04	78.9	41.52	58.8
Sept. 6.4	27.90	88.8	23.96	28.7	45.24	66.4	19.91	81.4	41.47	59.6
16.4	27.37	91.4	23.86	29.8	44.99	68.5	19.73	83.6	41.38	60.3
26.3	26.76	93.7	23.73	30.6	44.65	70.4	19.51	85.4	41.25	61.1
Oct. 6.3	26.09	95.5	23.57	31.1	44.26	72.0	19.27	86.8	41.10	61.9
16.3	25.38	96.8	23.40	31.3	43.83	73.1	19.01	87.7	40.94	62.6
26.3	24.64	97.6	23.23	31.2	43.38	73.7	18.74	88.1	40.77	63.2
Nov. 5.2	23.89	97.8	23.07	30.8	42.93	73.8	18.48	88.1	40.60	63.7
15.2	23.16	97.5	22.92	30.1	42.51	73.4	18.22	87.5	40.45	64.1
25.2	22.46	96.6	22.78	29.1	42.14	72.6	17.98	86.5	40.32	64.3
Dec. 5.2	21.82	95.1	22.67	27.9	41.82	71.2	17.77	85.0	40.22	64.4
15.1	21.25	93.1	22.59	26.4	41.58	69.4	17.60	83.0	40.16	64.3
25.1	20.78	90.6	22.55	24.8	41.43	67.3	17.47	80.6	40.13	64.1
35.1	20.41	87.7	22.53	23.0	41.37	64.8	17.38	77.9	40.13	63.8

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

389

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ε Cygni.		μ Aquarii.		12 Year Cat. 1879.		ν Cygni.		61 Cygni.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.
	h m 20 42	° ' " +33 37	h m 20 47	° ' " - 9 19	h m 20 51	° ' " +80 12	h m 20 53	° ' " +40 48	h m 21 2	° ' " +38 17
Jan. 1.1	27.23	33.5	39.33	50.0	42.22	36.3	42.47	49.1	44.25	51.4
11.1	27.20	31.0	39.35	50.6	41.49	33.4	42.40	46.5	44.19	48.9
21.1	27.21	28.4	39.40	51.1	40.99	30.3	42.38	43.7	44.18	46.3
31.0	27.26	25.7	39.48	51.5	40.72	26.9	42.41	40.8	44.21	43.6
Feb. 10.0	27.35	23.1	39.60	51.7	40.70	23.5	42.48	37.9	44.28	41.0
20.0	27.48	20.7	39.74	51.9	40.92	20.2	42.60	35.2	44.40	38.5
29.9	27.65	18.6	39.91	51.8	41.38	17.1	42.77	32.8	44.56	36.2
Mar. 10.9	27.86	16.8	40.11	51.6	42.05	14.2	42.97	30.8	44.76	34.3
20.9	28.11	15.5	40.34	51.1	42.92	11.8	43.22	29.1	45.01	32.8
30.9	28.38	14.7	40.59	50.4	43.95	9.9	43.50	28.0	45.28	31.8
Apr. 9.8	28.68	14.4	40.86	49.5	45.09	8.6	43.81	27.5	45.59	31.4
19.8	28.99	14.7	41.15	48.4	46.32	7.9	44.15	27.5	45.92	31.5
29.8	29.32	15.5	41.45	47.2	47.58	7.8	44.50	28.1	46.27	32.1
May 9.7	29.65	16.8	41.76	45.8	48.83	8.4	44.85	29.2	46.62	33.3
19.7	29.98	18.5	42.07	44.4	50.03	9.5	45.20	30.8	46.98	34.9
29.7	30.29	20.6	42.37	42.9	51.15	11.2	45.54	32.9	47.33	37.0
June 8.7	30.59	23.0	42.66	41.4	52.14	13.4	45.86	35.3	47.66	39.4
18.6	30.86	25.7	42.94	40.0	52.99	16.0	46.15	38.0	47.96	42.2
28.6	31.10	28.6	43.18	38.6	53.66	19.0	46.40	41.0	48.22	45.2
July 8.6	31.29	31.6	43.40	37.4	54.14	22.3	46.61	44.1	48.45	48.3
18.6	31.44	34.6	43.58	36.4	54.42	25.7	46.77	47.3	48.63	51.5
28.5	31.54	37.5	43.71	35.5	54.49	29.2	46.88	50.4	48.76	54.7
Aug. 7.5	31.59	40.3	43.80	34.9	54.35	32.8	46.94	53.5	48.84	57.8
17.5	31.59	43.0	43.84	34.4	54.00	36.3	46.94	56.5	48.87	60.8
27.5	31.54	45.4	43.84	34.1	53.45	39.7	46.89	59.2	48.84	63.6
Sept. 6.4	31.45	47.6	43.80	34.0	52.72	42.9	46.79	61.7	48.77	66.2
16.4	31.32	49.4	43.72	34.0	51.82	45.8	46.64	63.9	48.65	68.4
26.4	31.16	50.9	43.61	34.2	50.77	48.4	46.46	65.7	48.50	70.3
Oct. 6.3	30.97	52.0	43.48	34.5	49.59	50.5	46.26	67.1	48.32	71.8
16.3	30.76	52.7	43.33	34.9	48.31	52.3	46.03	68.1	48.12	72.9
26.3	30.55	53.0	43.17	35.3	46.96	53.5	45.79	68.6	47.91	73.6
Nov. 5.3	30.34	52.9	43.02	35.8	45.58	54.2	45.55	68.7	47.69	73.8
15.2	30.14	52.3	42.89	36.3	44.20	54.3	45.32	68.3	47.48	73.5
25.2	29.96	51.3	42.77	36.9	42.85	53.9	45.10	67.4	47.29	72.8
Dec. 5.2	29.80	49.9	42.67	37.5	41.57	52.8	44.91	66.0	47.11	71.6
15.1	29.68	48.1	42.61	38.1	40.39	51.2	44.75	64.2	46.96	70.0
25.1	29.58	45.9	42.57	38.7	39.36	49.1	44.62	62.1	46.85	68.1
35.1	29.53	43.5	42.57	39.3	38.51	46.5	44.53	59.6	46.78	65.8

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Cygni.			τ Cygni.			α Cephei.			ι Pegasi.			ζ Capricorni.		
	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion South.
	h m s	° ' "		h m s	° ' "		h m s	° ' "		h m s	° ' "		h m s	° ' "	
	21 8	+29 50		21 11	+37 38		21 16	+62 11		21 17	+19 24		21 21	-22 48	
Jan. 1.1	59.22	.05	59.1	5.08	.07	72.2	20.67	.22	51.9	47.95	.04	37.8	22.73	.01	46.4
11.1	59.17	.01	56.8	5.01	.03	69.7	20.45	.16	49.1	47.91	.00	36.0	22.72	.02	46.2
21.1	59.16	.03	54.4	4.98	.01	67.1	20.29	.08	46.1	47.91	.02	34.1	22.74	.05	45.8
31.0	59.19	.06	52.0	4.99	.05	64.4	20.21	.00	42.9	47.93	.07	32.1	22.79	.09	45.3
Feb. 10.0	59.25	.10	49.6	5.04	.10	61.7	20.21	.09	39.6	48.00	.10	30.2	22.88	.12	44.7
20.0	59.35	.14	47.4	5.14	.14	59.2	20.30	.17	36.3	48.10	.13	28.5	23.00	.15	43.9
Mar. 1.0	59.49	.18	45.4	5.28	.19	56.9	20.47	.24	33.3	48.23	.16	27.0	23.15	.19	42.9
10.9	59.67	.21	43.7	5.47	.22	54.9	20.71	.32	30.5	48.39	.20	25.8	23.34	.21	41.8
20.9	59.88	.25	42.4	5.69	.26	53.3	21.03	.39	28.2	48.59	.23	25.0	23.55	.25	40.6
30.9	60.13	.27	41.6	5.95	.29	52.2	21.42	.43	26.3	48.82	.25	24.6	23.80	.27	39.3
Apr. 9.8	60.40	.30	41.3	6.24	.32	51.6	21.85	.48	25.0	49.07	.28	24.6	24.07	.29	37.8
19.8	60.70	.31	41.4	6.56	.33	51.6	22.33	.50	24.3	49.35	.30	25.0	24.36	.31	36.3
29.8	61.01	.33	42.1	6.89	.35	52.1	22.83	.52	24.3	49.65	.30	25.8	24.67	.33	34.7
May 9.8	61.34	.32	43.3	7.24	.34	53.1	23.35	.51	24.8	49.95	.31	27.1	25.00	.33	33.2
19.7	61.66	.32	44.8	7.58	.34	54.7	23.86	.50	26.0	50.26	.31	28.7	25.33	.33	31.7
29.7	61.98	.31	46.8	7.92	.32	56.6	24.36	.46	27.7	50.57	.30	30.6	25.66	.33	30.3
June 8.7	62.29	.28	49.1	8.24	.30	59.0	24.82	.42	29.9	50.87	.28	32.7	25.99	.31	29.0
18.7	62.57	.26	51.6	8.54	.27	61.6	25.24	.36	32.5	51.15	.26	35.0	26.30	.29	27.9
28.6	62.83	.22	54.3	8.81	.22	64.5	25.60	.30	35.5	51.41	.22	37.5	26.59	.26	27.0
July 8.6	63.05	.17	57.2	9.03	.18	67.5	25.90	.22	38.8	51.63	.19	40.0	26.85	.22	26.3
18.6	63.22	.13	60.0	9.21	.14	70.6	26.12	.15	42.3	51.82	.14	42.5	27.07	.18	25.9
28.5	63.35	.09	62.9	9.35	.08	73.7	26.27	.07	45.8	51.96	.10	44.9	27.25	.13	25.7
Aug. 7.5	63.44	.03	65.6	9.43	.02	76.7	26.34	.02	49.4	52.06	.05	47.2	27.38	.08	25.7
17.5	63.47	.01	68.2	9.45	.02	79.6	26.32	.10	52.9	52.11	.01	49.3	27.46	.04	26.0
27.5	63.46	.06	70.6	9.43	.07	82.4	26.22	.17	56.3	52.12	.03	51.3	27.50	.01	26.4
Sept. 6.4	63.40	.10	72.7	9.36	.11	84.9	26.05	.23	59.6	52.09	.07	53.0	27.49	.06	27.0
16.4	63.30	.13	74.6	9.25	.15	87.0	25.82	.30	62.5	52.02	.11	54.4	27.43	.09	27.7
26.4	63.17	.16	76.1	9.10	.18	88.9	25.52	.35	65.1	51.91	.13	55.5	27.34	.12	28.5
Oct. 6.4	63.01	.18	77.3	8.92	.20	90.4	25.17	.39	67.3	51.78	.15	56.4	27.22	.14	29.3
16.3	62.83	.19	78.1	8.72	.22	91.5	24.78	.42	69.1	51.63	.16	56.9	27.08	.15	30.1
26.3	62.64	.19	78.5	8.50	.22	92.1	24.36	.43	70.4	51.47	.17	57.1	26.93	.15	30.9
Nov. 5.3	62.45	.18	78.5	8.28	.21	92.3	23.93	.44	71.1	51.30	.15	57.0	26.78	.15	31.6
15.2	62.27	.18	78.2	8.07	.21	92.1	23.49	.43	71.3	51.15	.15	56.6	26.63	.14	32.2
25.2	62.09	.15	77.4	7.86	.18	91.4	23.06	.40	70.9	51.00	.13	55.9	26.49	.11	32.6
Dec. 5.2	61.94	.13	76.2	7.68	.16	90.2	22.66	.37	70.0	50.87	.11	54.9	26.38	.09	32.9
15.2	61.81	.10	74.7	7.52	.12	88.6	22.29	.32	68.5	50.76	.08	53.6	26.29	.06	33.1
25.1	61.71	.07	72.8	7.40	.09	86.7	21.97	.26	66.4	50.68	.05	52.0	26.23	.05	33.1
35.1	61.64	.07	70.7	7.31	.09	84.4	21.71	.26	63.9	50.63	.05	50.3	26.20	.05	32.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Aquarii.		β Cephei (<i>pr.</i>).		ξ Aquarii.		74 Cygni.		λ^1 Octantis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 21 26	° ' 5 58	h m 21 27	° ' 70 9	h m 21 32	° ' 8 15	h m 21 33	° ' 39 59	h m 21 36	° ' 83 8
	s	"	s	"	s	"	s	"	s	"
Jan. 1.1	40.95	40.9	25.84	33.3	49.28	68.7	13.73	64.1	41.09	51.7
11.1	40.93	41.6	25.46	30.7	49.26	69.2	13.63	61.8	40.36	48.8
21.1	40.94	42.2	25.18	27.8	49.26	69.7	13.57	59.2	39.93	45.6
31.1	40.98	42.7	25.00	24.6	49.30	70.1	13.55	56.5	39.80	42.1
Feb. 10.0	41.05	43.1	24.94	21.2	49.37	70.3	13.57	53.8	39.97	38.6
20.0	41.16	43.3	24.99	17.9	49.47	70.4	13.64	51.2	40.45	35.0
Mar. 1.0	41.29	43.4	25.16	14.7	49.59	70.2	13.76	48.7	41.21	31.4
10.9	41.45	43.2	25.44	11.8	49.75	69.9	13.92	42.4	39.93	28.0
20.9	41.64	42.8	25.83	9.2	49.94	69.4	14.13	44.8	43.50	24.8
30.9	41.86	42.1	26.31	7.1	50.16	68.6	14.37	43.5	44.98	21.9
Apr. 9.9	42.11	41.2	26.87	5.5	50.40	67.6	14.65	42.7	46.65	19.3
19.8	42.38	40.1	27.48	4.6	50.67	66.4	14.96	42.4	48.47	17.1
29.8	42.67	38.8	28.14	4.2	50.96	65.0	15.30	42.7	50.41	15.3
May 9.8	42.97	37.3	28.82	4.5	51.26	63.5	15.65	43.5	52.42	14.0
19.7	43.28	35.7	29.49	5.4	51.57	61.9	16.00	44.8	54.47	13.2
29.7	43.59	34.0	30.14	6.8	51.88	60.2	16.36	46.6	56.51	13.0
June 8.7	43.89	32.3	30.75	8.8	52.19	58.5	16.70	48.3	58.50	13.2
18.7	44.18	30.6	31.30	11.3	52.49	56.9	17.02	51.8	60.38	14.0
28.6	44.45	29.0	31.77	14.2	52.76	55.3	17.31	54.1	62.12	15.2
July 8.6	44.69	27.5	32.16	17.3	53.01	53.9	17.56	57.1	63.67	16.9
18.6	44.90	26.1	32.45	20.7	53.22	52.6	17.76	60.2	64.99	19.0
28.6	45.06	25.0	32.64	24.3	53.39	51.6	17.92	63.4	66.03	21.5
Aug. 7.5	45.19	24.0	32.73	28.0	53.52	50.7	18.03	66.5	66.78	24.2
17.5	45.27	23.2	32.70	31.6	53.61	50.1	18.08	69.6	67.20	27.1
27.5	45.30	22.7	32.57	35.1	53.65	49.7	18.08	72.5	67.29	30.1
Sept. 6.4	45.29	22.3	32.34	38.5	53.65	49.4	18.03	75.1	67.04	33.1
16.4	45.24	22.2	32.01	41.7	53.61	49.4	17.94	77.5	66.46	35.9
26.4	45.16	22.2	31.60	44.6	53.53	49.5	17.81	79.6	65.58	38.5
Oct. 6.4	45.05	22.4	31.12	47.1	53.43	49.8	17.64	81.4	64.43	40.8
16.3	44.93	22.7	30.58	49.1	53.31	50.2	17.44	82.7	63.07	42.6
26.3	44.79	23.1	29.99	50.7	53.17	50.7	17.23	83.6	61.54	43.9
Nov. 5.3	44.65	23.6	29.38	51.8	53.03	51.2	17.01	84.1	59.92	44.6
15.3	44.51	24.2	28.75	52.3	52.89	51.8	16.79	84.1	58.26	44.7
25.2	44.38	24.8	28.13	52.2	52.77	52.4	16.58	83.6	56.64	44.2
Dec. 5.2	44.28	25.4	27.53	51.5	52.66	53.1	16.38	82.7	55.12	43.0
15.2	44.19	26.1	26.96	50.3	52.57	53.7	16.20	81.3	53.77	41.3
25.1	44.13	26.8	26.46	48.5	52.50	54.3	16.05	79.5	52.62	39.0
35.1	44.09	27.5	26.02	46.1	52.47	54.8	15.93	77.4	51.73	36.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Pegasi.			11 Cephei.			π Cygni.			μ Capricorni.			16 Pegasi.		
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.		Right Ascension.	Declina- tion North.	
	h m 21 39	° + 9 26		h m 21 40	° + 70 52		h m 21 43	° + 48 52		h m 21 48	° - 13 58		h m 21 48	° + 25 29	
Jan. 1.1	38.14	67.5		31.87	85.2		21.64	67.5		14.84	76.0		50.70	32.7	
11.1	38.10	66.2	1.3	31.45	82.7	2.5	21.49	65.1	2.4	14.81	76.2	0.2	50.63	30.8	1.9
21.1	38.09	64.8	1.4	31.12	79.9	2.8	21.39	62.4	2.7	14.80	76.3	0.1	50.59	28.8	2.0
31.1	38.11	63.4	1.4	30.90	76.8	3.1	21.33	59.5	2.9	14.83	76.3	0.0	50.58	26.7	2.1
Feb. 10.0	38.15	62.2	1.2	30.79	73.5	3.3	21.32	56.6	2.9	14.88	76.2	0.1	50.61	24.6	2.1
			1.2			3.3			2.9			0.3			1.9
20.0	38.24	61.0		30.80	70.2		21.37	53.7		14.97	75.9		50.67	22.7	
Mar. 1.0	38.35	60.1	0.9	30.94	67.0	3.2	21.47	50.9	2.8	15.09	75.4	0.5	50.77	20.9	1.8
10.9	38.49	59.4	0.7	31.20	64.0	3.0	21.63	48.4	2.5	15.23	74.7	0.7	50.90	19.4	1.5
20.9	38.67	59.1	0.3	31.56	61.3	2.7	21.85	46.3	2.1	15.41	73.8	0.9	51.07	18.2	1.2
30.9	38.88	59.0	0.1	32.03	59.1	2.2	22.11	44.6	1.7	15.62	72.7	1.1	51.28	17.4	0.8
			0.4			1.7			1.2			1.3			0.4
Apr. 9.9	39.11	59.4	0.6	32.59	57.4		22.42	43.4	0.6	15.86	71.4		51.52	17.0	
19.8	39.37	60.0	1.0	33.21	56.2	1.2	22.76	42.8	0.6	16.12	70.0	1.4	51.79	17.1	0.1
29.8	39.65	61.0	1.0	33.87	55.7	0.5	23.14	42.8	0.0	16.41	68.4	1.6	52.09	17.7	0.6
May 9.8	39.95	62.3	1.3	34.57	55.8	0.1	23.53	43.3	0.5	16.72	66.8	1.6	52.40	18.7	1.0
19.7	40.26	63.9	1.6	35.27	56.6	0.8	23.92	44.4	1.1	17.03	65.1	1.7	52.72	20.1	1.4
			1.9			1.3			1.6			1.7			1.8
29.7	40.56	65.8		35.95	57.9	1.8	24.32	46.0		17.35	63.4		53.04	21.9	
June 8.7	40.86	67.8	2.0	36.60	59.7	2.3	24.70	48.1	2.1	17.67	61.8	1.6	53.36	24.0	2.1
18.7	41.15	69.9	2.1	37.19	62.0	2.8	25.06	50.6	2.5	17.98	60.2	1.6	53.66	26.3	2.3
28.6	41.42	72.0	2.1	37.71	64.8	2.8	25.38	53.4	2.8	18.27	58.8	1.4	53.94	28.8	2.5
July 8.6	41.66	74.2	2.2	38.14	67.9	3.1	25.66	56.4	3.0	18.54	57.6	1.2	54.19	31.5	2.7
			2.1			3.3			3.3			1.0			2.7
18.6	41.87	76.3	2.0	38.47	71.2	3.6	25.90	59.7	3.3	18.77	56.6		54.40	34.2	2.7
28.6	42.04	78.3	1.8	38.70	74.8	3.6	26.07	63.0	3.4	18.96	55.8	0.8	54.58	36.9	2.6
Aug. 7.5	42.17	80.1	1.7	38.83	78.4	3.7	26.19	66.4	3.3	19.11	55.2	0.6	54.71	39.5	2.5
17.5	42.25	81.8	1.7	38.84	82.1	3.6	26.25	69.7	3.3	19.21	54.9	0.3	54.79	42.0	2.5
27.5	42.29	83.2	1.4	38.74	85.7	3.5	26.25	73.0	3.0	19.27	54.8	0.1	54.83	44.3	2.3
			1.3			3.5			3.0			0.1			2.1
Sept. 6.5	42.28	84.5	1.0	38.54	89.2	3.3	26.19	76.0	2.8	19.29	54.9	0.2	54.82	46.4	1.8
16.4	42.24	85.5	0.7	38.24	92.5	3.0	26.08	78.8	2.4	19.26	55.1	0.5	54.77	48.2	1.6
26.4	42.16	86.2	0.5	37.85	95.5	2.6	25.93	81.2	2.2	19.20	55.6	0.5	54.68	49.8	1.6
Oct. 6.4	42.06	86.7	0.3	37.38	98.1	2.3	25.73	83.4	1.7	19.10	56.1	0.6	54.56	51.1	1.3
16.3	41.93	87.0	0.1	36.85	100.4	1.8	25.50	85.1	1.3	18.99	56.7	0.6	54.42	52.0	0.6
			0.1			1.8			1.3			0.6			
26.3	41.79	87.1	0.2	36.26	102.2	1.3	25.25	86.4	0.8	18.86	57.3	0.7	54.27	52.6	0.2
Nov. 5.3	41.65	86.9	0.5	35.63	103.5	0.7	24.99	87.2	0.2	18.72	58.0	0.7	54.10	52.8	0.1
15.3	41.51	86.4	0.6	34.99	104.2	0.1	24.72	87.4	0.2	18.58	58.7	0.6	53.94	52.7	0.5
25.2	41.37	85.8	0.8	34.35	104.3	0.5	24.45	87.2	0.7	18.45	59.3	0.5	53.78	52.2	0.8
Dec. 5.2	41.25	85.0	1.1	33.72	103.8	1.0	24.20	86.5	1.3	18.34	59.8	0.5	53.63	51.4	1.2
			1.1			1.0			1.3			0.5			
15.2	41.15	83.9	1.1	33.12	102.8	1.7	23.96	85.2	1.7	18.24	60.3	0.4	53.50	50.2	1.4
25.2	41.07	82.8	1.3	32.58	101.1	2.1	23.76	83.5	2.1	18.17	60.7	0.3	53.39	48.8	1.7
35.1	41.02	81.5		32.10	99.0		23.58	81.4		18.12	61.0		53.30	47.1	

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

393

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	79 Draconis.			α Aquarii.			α Gruis.			π ^a Pegasi.			θ Aquarii.		
	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion South.
	h	m	°	h	m	°	h	m	°	h	m	°	h	m	°
	21	51	+73 15	22	1	- 0 45	22	2	-47 24	22	5	+32 43	22	11	- 8 14
	s			s			s			s			s		
Jan. 1.1	39.93		71.2	1.69		67.3	23.66		42.2	52.28		38.5	56.92		38.1
11.1	39.41	.52	68.8	1.65	.04	68.1	23.58	.08	40.8	52.18	.10	36.6	56.87	.05	38.6
21.1	38.99	.42	66.1	1.63	.02	68.9	23.53	.05	39.2	52.11	.07	34.5	56.84	.03	39.0
31.1	38.69	.30	63.1	1.63	.00	69.7	23.53	.00	37.3	52.07	.04	32.2	56.84	.00	39.3
Feb. 10.0	38.52	.17	59.8	1.67	.04	70.3	23.58	.05	35.1	52.06	.01	29.9	56.87	.03	39.5
		.03	3.3		.06	0.5		.09	2.3		.04	2.3		.06	0.0
20.0	38.49		56.5	1.73		70.8	23.67		32.8	52.10		27.6	56.93		39.5
Mar. 1.0	38.59	.10	53.2	1.82	.09	71.1	23.81	.14	30.4	52.18	.08	25.5	57.02	.09	39.3
11.0	38.84	.25	50.2	1.95	.13	71.1	23.99	.18	27.9	52.30	.12	23.6	57.14	.12	38.9
		.38	2.8		.16	0.2		.23	2.5		.16	1.5		.15	0.6
20.9	39.22		47.4	2.11		70.9	24.22		25.4	52.46		22.1	57.29		38.3
30.9	39.71	.49	45.1	2.30	.19	70.4	24.48	.26	22.8	52.66	.20	20.9	57.47	.18	37.4
		.60	1.9		.22	0.7		.31	2.4		.24	0.7		.22	1.1
Apr. 9.9	40.31		43.2	2.52		69.7	24.79		20.4	52.90		20.2	57.69		36.3
19.8	40.99	.68	41.9	2.77	.25	68.7	25.14	.35	18.1	53.17	.27	19.9	57.93	.24	35.0
29.8	41.73	.74	41.2	3.04	.27	67.4	25.52	.38	15.9	53.47	.30	20.2	58.20	.27	33.5
May 9.8	42.50	.77	41.1	3.33	.29	65.9	25.92	.40	14.0	53.79	.32	20.9	58.49	.29	31.9
19.7	43.29	.79	41.7	3.64	.31	64.3	26.34	.42	12.3	54.13	.34	22.1	58.80	.31	30.1
		.77	1.1		.31	1.8		.43	1.3		.34	1.6		.32	1.8
29.7	44.06		42.8	3.95		62.5	26.77		11.0	54.47		23.7	59.12		28.3
June 8.7	44.79	.73	44.5	4.26	.31	60.6	27.20	.43	10.0	54.80	.33	25.7	59.43	.31	26.5
18.7	45.47	.68	46.7	4.56	.30	58.7	27.62	.42	9.3	55.12	.32	28.0	59.74	.31	24.7
28.6	46.07	.60	49.3	4.84	.28	56.8	28.02	.40	9.1	55.42	.30	30.6	60.03	.29	23.0
July 8.6	46.57	.50	52.3	5.10	.26	55.0	28.39	.37	9.2	55.69	.27	33.3	60.30	.27	21.5
		.40	3.2		.23	1.7		.32	0.5		.24	2.9		.24	1.4
18.6	46.97		55.5	5.33		53.3	28.71		9.7	55.93		36.2	60.54		20.1
28.6	47.26	.29	59.0	5.52	.19	51.8	28.99	.28	10.6	56.12	.19	39.1	60.75	.21	18.9
Aug. 7.5	47.42	.16	62.7	5.67	.15	50.4	29.21	.22	11.9	56.27	.15	42.0	60.92	.17	17.9
17.5	47.46	.04	66.4	5.78	.11	49.3	29.37	.16	13.4	56.37	.10	44.8	61.04	.12	17.2
27.5	47.38	.08	70.0	5.84	.06	48.4	29.46	.09	15.1	56.42	.05	47.5	61.12	.08	16.7
		.20	3.6		.02	0.7		.04	1.9		.00	2.5		.04	0.3
Sept. 6.5	47.18		73.6	5.86		47.7	29.50		17.0	56.42		50.0	61.16		16.4
16.4	46.87	.31	77.0	5.84	.02	47.2	29.47	.03	18.9	56.38	.04	52.3	61.15	.01	16.4
26.4	46.45	.42	80.1	5.79	.05	46.9	29.38	.09	20.9	56.30	.08	54.3	61.11	.04	16.3
Oct. 6.4	45.94	.51	83.0	5.71	.08	46.8	29.25	.13	22.8	56.18	.12	55.9	61.04	.07	16.8
16.4	45.35	.59	85.4	5.60	.11	46.9	29.08	.17	24.5	56.04	.14	57.3	60.94	.10	17.2
		.65	2.0		.12	0.3		.20	1.4		.16	0.9		.12	0.5
26.3	44.70		87.4	5.48		47.2	28.88		25.9	55.88		58.2	60.82		17.7
Nov. 5.3	44.00	.70	88.9	5.35	.13	47.6	28.66	.22	27.1	55.71	.17	58.8	60.70	.12	18.3
15.3	43.26	.74	89.8	5.22	.13	48.1	28.44	.22	27.9	55.53	.18	58.9	60.57	.13	18.9
25.2	42.52	.74	90.1	5.09	.13	48.7	28.22	.22	28.3	55.35	.18	58.7	60.44	.13	19.6
Dec. 5.2	41.79	.73	89.9	4.98	.11	49.4	28.02	.20	28.4	55.18	.17	58.0	60.32	.12	20.2
		.70	0.9		.10	0.8		.18	0.4		.16	1.0		.10	0.6
15.2	41.09		89.0	4.88		50.2	27.84		28.0	55.02		57.0	60.22		20.8
25.2	40.44	.65	87.6	4.80	.08	51.0	27.70	.14	27.2	54.88	.14	55.6	60.14	.08	21.5
35.1	39.86	.58	85.6	4.74	.06	51.8	27.59	.11	26.1	54.77	.11	53.8	60.08	.06	22.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ν Octantis.		γ Aquarii.		π Aquarii.		σ Aquarii.		α Lacertæ.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m 22 13	° ' " -86 25	h m 22 16	° ' " - 1 50	h m 22 20	° ' " + 0 54	h m 22 25	° ' " - 11 8	h m 22 27	° ' " +49 48
	s	"	s	"	s	"	s	"	s	"
Jan. 1.2	57.13	2.01	52.50	.06	32.96	.06	44.98	.06	28.26	.19
11.1	55.12	1.51	52.44	.03	32.90	.04	44.92	.04	28.07	.16
21.1	53.61	0.95	52.41	.01	32.86	.01	44.88	.02	27.91	.12
31.1	52.66	0.38	52.40	.02	32.85	.01	44.86	.02	27.79	.07
Feb. 10.0	52.28	0.19	52.42	.05	32.86	.04	44.88	.04	27.72	.01
20.0	52.47	0.75	52.47	.08	32.90	.08	44.92	.08	27.71	.04
Mar. 1.0	53.22	1.29	52.55	.11	32.98	.10	45.00	.10	27.75	.10
11.0	54.51	1.79	52.66	.15	33.08	.14	45.10	.14	27.85	.15
20.9	56.30	2.23	52.81	.17	33.22	.18	45.24	.18	28.00	.22
30.9	58.55	2.67	52.98	.21	33.40	.20	45.42	.21	28.22	.27
Apr. 9.9	61.22	3.01	53.19	.24	33.60	.24	45.63	.23	28.49	.31
19.9	64.23	3.31	53.43	.27	33.84	.26	45.86	.26	28.80	.35
29.8	67.54	3.53	53.70	.28	34.10	.29	46.12	.29	29.15	.38
May 9.8	71.07	3.68	53.98	.30	34.39	.30	46.41	.31	29.53	.41
19.8	74.75	3.75	54.28	.32	34.69	.31	46.72	.32	29.94	.41
29.7	78.50	3.74	54.60	.31	35.00	.31	47.04	.32	30.35	.41
June 8.7	82.24	3.63	54.91	.30	35.31	.30	47.36	.31	30.76	.39
18.7	85.87	3.45	55.21	.29	35.61	.29	47.67	.30	31.15	.37
28.7	89.32	3.16	55.50	.27	35.90	.27	47.97	.28	31.52	.33
July 8.6	92.48	2.80	55.77	.24	36.17	.24	48.25	.25	31.85	.29
18.6	95.28	2.35	56.01	.21	36.41	.21	48.50	.22	32.14	.24
28.6	97.63	1.84	56.22	.16	36.62	.17	48.72	.18	32.38	.19
Aug. 7.6	99.47	1.26	56.38	.13	36.79	.12	48.90	.14	32.57	.12
17.5	100.73	0.64	56.51	.08	36.91	.08	49.04	.10	32.69	.07
27.5	101.37	0.00	56.59	.04	36.99	.04	49.14	.05	32.76	.01
Sept. 6.5	101.37	0.65	56.63	.01	37.03	.00	49.19	.01	32.77	.04
16.4	100.72	1.26	56.62	.03	37.03	.03	49.20	.03	32.73	.09
26.4	99.46	1.83	56.59	.07	37.00	.07	49.17	.07	32.64	.14
Oct. 6.4	97.63	2.34	56.52	.10	36.93	.09	49.10	.09	32.50	.18
16.4	95.29	2.75	56.42	.11	36.84	.11	49.01	.10	32.32	.21
26.3	92.54	3.04	56.31	.12	36.73	.12	48.91	.13	32.11	.24
Nov. 5.3	89.50	3.22	56.19	.13	36.61	.13	48.78	.12	31.87	.25
15.3	86.28	3.28	56.06	.12	36.48	.12	48.66	.13	31.62	.26
25.3	83.00	3.20	55.94	.12	36.36	.12	48.53	.12	31.36	.26
Dec. 5.2	79.80	3.00	55.82	.10	36.24	.11	48.41	.10	31.10	.25
15.2	76.80	2.69	55.72	.09	36.13	.09	48.31	.09	30.85	.23
25.2	74.11	2.29	55.63	.07	36.04	.07	48.22	.08	30.62	.21
35.1	71.82		55.56		35.97		48.14		30.41	

FIXED STARS, 1908.

(CONSTANTS OF STRUVE AND PETERS.)

395

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♈ Aquarii.		226 Cephei (B.).		10 Lacertæ.		β Octantis.		ζ Pegasi.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m 22 30	° ' " — 0 35	h m 22 30	° ' " +75 44	h m 22 35	° ' " +38 34	h m 22 36	° ' " —81 51	h m 22 36	° ' " +10 20
Jan. 1.2	36.04	37.3	37.06	79.6	6.28	21.1	33.88	73.9	50.77	59.7
11.1	35.97	38.1	36.35	77.8	6.14	19.3	32.93	71.5	50.69	58.6
21.1	35.92	38.9	35.73	75.5	6.03	17.2	32.18	68.7	50.63	57.4
31.1	35.90	39.6	35.24	72.8	5.95	15.0	31.65	65.5	50.60	56.2
Feb. 10.1	35.91	40.2	34.89	69.8	5.90	12.6	31.35	62.0	50.59	55.0
20.0	35.94	40.6	34.69	66.6	5.89	10.1	31.30	58.4	50.61	54.0
Mar. 1.0	36.01	40.9	34.66	63.4	5.93	7.8	31.49	54.7	50.67	53.1
11.0	36.11	40.9	34.79	60.2	6.02	5.6	31.91	50.9	50.76	52.4
20.9	36.24	40.6	35.08	57.2	6.15	3.7	32.56	47.3	50.88	52.0
30.9	36.40	40.1	35.53	54.5	6.33	2.2	33.43	43.8	51.04	51.9
Apr. 9.9	36.60	39.4	36.11	52.3	6.56	1.1	34.49	40.6	51.23	52.1
19.9	36.83	38.4	36.81	50.5	6.82	0.5	35.72	37.7	51.46	52.6
29.8	37.09	37.1	37.60	49.3	7.12	0.3	37.11	35.1	51.71	53.5
May 9.8	37.37	35.6	38.46	48.7	7.45	0.7	38.62	32.9	51.99	54.7
19.8	37.67	33.9	39.36	48.7	7.80	1.5	40.22	31.2	52.29	56.2
29.8	37.98	32.0	40.27	49.3	8.16	2.9	41.89	30.1	52.60	58.0
June 8.7	38.29	30.1	41.16	50.5	8.52	4.6	43.57	29.4	52.91	59.9
18.7	38.60	28.2	42.00	52.2	8.86	6.7	45.24	29.3	53.22	62.0
28.7	38.89	26.2	42.78	54.4	9.19	9.2	46.85	29.7	53.52	64.2
July 8.6	39.17	24.3	43.47	57.1	9.50	11.9	48.35	30.6	53.80	66.4
18.6	39.42	22.6	44.05	60.1	9.77	14.8	49.72	32.1	54.05	68.5
28.6	39.63	21.0	44.51	63.4	10.00	17.8	50.91	34.0	54.26	70.6
Aug. 7.6	39.81	19.6	44.85	66.9	10.18	20.9	51.88	36.3	54.44	72.6
17.5	39.95	18.4	45.04	70.6	10.32	23.9	52.60	38.9	54.58	74.4
27.5	40.04	17.4	45.10	74.3	10.40	26.9	53.05	41.7	54.67	76.0
Sept. 6.5	40.09	16.6	45.02	78.0	10.43	29.7	53.23	44.7	54.72	77.4
16.5	40.10	16.1	44.81	81.7	10.42	32.3	53.12	47.7	54.74	78.6
26.4	40.07	15.8	44.46	85.2	10.37	34.7	52.73	50.7	54.71	79.5
Oct. 6.4	40.02	15.7	44.00	88.4	10.27	36.8	52.07	53.4	54.66	80.2
16.4	39.93	15.8	43.43	91.3	10.14	38.5	51.19	55.8	54.57	80.7
26.3	39.83	16.0	42.77	93.8	9.99	39.9	50.10	57.8	54.47	80.9
Nov. 5.3	39.71	16.4	42.02	95.9	9.82	40.9	48.86	59.3	54.35	80.9
15.3	39.59	16.9	41.22	97.4	9.63	41.5	47.52	60.2	54.23	80.7
25.3	39.47	17.5	40.38	98.4	9.44	41.6	46.14	60.5	54.10	80.2
Dec. 5.2	39.35	18.2	39.52	98.8	9.25	41.3	44.76	60.2	53.98	79.6
15.2	39.24	18.9	38.67	98.5	9.07	40.6	43.44	59.2	53.86	78.8
25.2	39.15	19.7	37.85	97.7	8.90	39.4	42.24	57.6	53.76	77.9
35.2	39.08	20.5	37.09	96.2	8.74	37.9	41.18	55.5	53.67	76.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	λ Pegasi.			ε Cephei.			λ Aquarii.			α Piscis Australis. (Fomalhaut.)			α Andromedæ.		
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion South.		Right Ascension.	Declina- tion South.		Right Ascension.	Declina- tion North.	
	h m	°		h m	°		h m	°		h m	°		h m	°	
	22 42	+23 4		22 46	-65 42		22 47	- 8 3		22 52	-30 6		22 57	+41 49	
	s	"		s	"		s	"		s	"		s	"	
Jan. 1.2	4.33	53.2	1.5	22.31	69.4	1.7	47.26	78.9	0.5	32.29	52.0	0.3	39.62	58.7	1.6
11.1	4.23	51.7	1.6	21.92	67.7	2.2	47.18	79.4	0.5	32.20	51.7	0.6	39.46	57.1	1.9
21.1	4.15	50.1	1.7	21.57	65.5	2.6	47.13	79.8	0.3	32.13	51.1	0.9	39.31	55.2	2.2
31.1	4.09	48.4	1.8	21.29	62.9	2.8	47.10	80.1	0.1	32.09	50.2	1.1	39.20	53.0	2.4
Feb. 10.1	4.07	46.6	1.7	21.09	60.1	3.1	47.09	80.2	0.1	32.07	49.1	1.4	39.12	50.6	2.4
20.0	4.07	44.9	1.6	20.97	57.0	3.1	47.11	80.1	0.2	32.09	47.7	1.6	39.08	48.2	2.4
Mar. 1.0	4.11	43.3	1.4	20.94	53.9	3.1	47.16	79.9	0.5	32.14	46.1	1.8	39.08	45.8	2.3
11.0	4.19	41.9	1.1	21.01	50.8	2.8	47.24	79.4	0.7	32.23	44.3	1.9	39.14	43.5	2.1
21.0	4.31	40.8	0.8	21.17	48.0	2.6	47.36	78.7	0.9	32.36	42.4	2.1	39.25	41.4	1.7
30.9	4.47	40.0	0.4	21.43	45.4	2.1	47.51	77.8	1.1	32.52	40.3	2.2	39.41	39.7	1.4
Apr. 9.9	4.67	39.6	0.1	21.78	43.3	1.7	47.69	76.7	1.4	32.72	38.1	2.3	39.62	38.3	0.9
19.9	4.90	39.5	0.4	22.20	41.6	1.1	47.91	75.3	1.6	32.96	35.8	2.2	39.87	37.4	0.5
29.8	5.16	39.9	0.8	22.69	40.5	0.6	48.16	73.7	1.7	33.24	33.6	2.2	40.17	36.9	0.1
May 9.8	5.45	40.7	1.2	23.22	39.9	0.1	48.44	72.0	1.8	33.54	31.4	2.2	40.50	37.0	0.6
19.8	5.76	41.9	1.6	23.79	40.0	0.6	48.73	70.2	1.9	33.87	29.2	2.0	40.85	37.6	1.1
29.8	6.08	43.5	1.9	24.38	40.6	1.2	49.04	68.3	2.0	34.21	27.2	1.8	41.22	38.7	1.5
June 8.7	6.41	45.4	2.1	24.96	41.8	1.7	49.36	66.3	1.9	34.56	25.4	1.5	41.59	40.2	1.9
18.7	6.73	47.5	2.3	25.53	43.5	2.2	49.68	64.4	1.8	34.92	23.9	1.3	41.96	42.1	2.3
28.7	7.04	49.8	2.5	26.06	45.7	2.6	49.98	62.6	1.7	35.26	22.6	1.0	42.32	44.4	2.6
July 8.7	7.32	52.3	2.5	26.54	48.3	3.0	50.27	60.9	1.5	35.59	21.6	0.6	42.65	47.0	2.9
18.6	7.58	54.8	2.6	26.96	51.3	3.3	50.53	59.4	1.3	35.89	21.0	0.3	42.94	49.9	3.0
28.6	7.80	57.4	2.5	27.32	54.6	3.4	50.77	58.1	1.1	36.16	20.7	0.1	43.20	52.9	3.1
Aug. 7.6	7.98	59.9	2.4	27.59	58.0	3.6	50.96	57.0	0.8	36.39	20.8	0.4	43.42	56.0	3.1
17.5	8.12	62.3	2.3	27.78	61.6	3.7	51.12	56.2	0.6	36.57	21.2	0.7	43.58	59.1	3.0
27.5	8.22	64.6	2.1	27.89	65.3	3.6	51.23	55.6	0.3	36.71	21.9	0.9	43.70	62.1	3.0
Sept. 6.5	8.27	66.7	1.9	27.91	68.9	3.6	51.30	55.3	0.3	36.80	22.8	1.2	43.76	65.1	2.8
16.5	8.28	68.6	1.6	27.85	72.5	3.3	51.33	55.2	0.1	36.84	24.0	1.3	43.77	67.9	2.6
26.4	8.25	70.2	1.4	27.71	75.8	3.2	51.32	55.3	0.3	36.83	25.3	1.4	43.74	70.5	2.4
Oct. 6.4	8.19	71.6	1.1	27.50	79.0	2.8	51.28	55.6	0.4	36.78	26.7	1.5	43.67	72.9	2.0
16.4	8.10	72.7	0.8	27.22	81.8	2.4	51.21	56.0	0.6	36.70	28.2	1.4	43.56	74.0	1.7
26.4	7.99	73.5	0.5	26.88	84.2	2.0	51.12	56.6	0.6	36.59	29.6	1.3	43.42	76.6	1.3
Nov. 5.3	7.86	74.0	0.1	26.49	86.2	1.5	51.01	57.2	0.7	36.46	30.9	1.1	43.26	77.9	0.9
15.3	7.72	74.1	0.1	26.07	87.7	0.9	50.89	57.9	0.7	36.32	32.0	0.9	43.07	78.8	0.4
25.3	7.58	74.0	0.5	25.62	88.6	0.4	50.77	58.6	0.7	36.17	32.9	0.7	42.88	79.2	0.0
Dec. 5.2	7.44	73.5	0.8	25.16	89.0	0.2	50.66	59.3	0.6	36.03	33.6	0.4	42.68	79.2	0.5
15.2	7.30	72.7	1.0	24.70	88.8	0.5	50.55	59.9	0.6	35.89	34.0	0.1	42.48	78.7	0.9
25.2	7.18	71.7	1.3	24.26	88.0	1.3	50.45	60.5	0.6	35.77	34.1	0.2	42.29	77.7	1.3
35.2	7.07	70.4		23.84	86.7		50.37	61.1		35.67	33.9		42.12	76.5	

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Pegasi. (Markab.)			ϕ Aquarii.			$\circ$ Cephei.			τ Pegasi.			θ Piscium.		
	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion South.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.	Right Ascension.		Declina- tion North.
	h m	s	° ' "	h m	s	° ' "	h m	s	° ' "	h m	s	° ' "	h m	s	° ' "
	23 0		+14 42	23 9		- 6 32	23 14		+67 36	23 16		+23 13	23 23		+ 5 52
Jan. 1.2	9.12		34.2	31.94		51.8	49.00		40.2	3.49		72.2	16.63		19.5
11.2	9.03	-.09	33.0	31.86	-.08	52.3	48.54	-.46	38.9	3.38	-.11	70.9	16.54	-.09	18.7
21.1	8.95	-.06	31.7	31.79	-.07	52.8	48.12	-.42	37.0	3.28	-.10	69.5	16.45	-.07	17.8
31.1	8.89	-.03	30.4	31.73	-.02	53.1	47.76	-.36	34.7	3.20	-.06	68.0	16.38	-.04	16.9
Feb. 10.1	8.86	.00	29.1	31.71	.00	53.3	47.47	.20	32.1	3.14	.03	66.4	16.34	.02	16.1
20.1	8.86	.03	27.9	31.71	.02	53.3	47.27	.10	29.2	3.11	.01	64.8	16.32	.01	15.4
Mar. 1.0	8.89	.06	26.8	31.73	.06	53.1	47.17	.00	26.1	3.12	.01	63.2	16.33	.01	14.9
11.0	8.95	.10	25.9	31.79	.10	52.7	47.17	.11	23.1	3.16	.04	61.8	16.37	.04	14.5
21.0	9.05	.13	25.2	31.89	.12	52.1	47.28	.21	20.1	3.24	.13	60.7	16.45	.11	14.4
30.9	9.18	.18	24.9	32.01	.17	51.3	47.49	.31	17.4	3.37	.16	59.9	16.56	.15	14.5
Apr. 9.9	9.36	.21	24.8	32.18	.20	50.2	47.80	.40	15.0	3.53	.21	59.4	16.71	.19	15.0
19.9	9.57	.24	25.1	32.38	.24	48.8	48.20	.48	13.1	3.74	.24	59.2	16.90	.23	15.7
29.9	9.81	.26	25.8	32.62	.26	47.3	48.68	.55	11.6	3.98	.27	59.4	17.13	.25	16.7
May 9.8	10.08	.30	26.8	32.88	.29	45.6	49.23	.59	10.7	4.25	.30	60.1	17.38	.28	18.0
19.8	10.38	.31	28.2	33.17	.30	43.8	49.82	.62	10.4	4.55	.32	61.1	17.66	.30	19.5
29.8	10.69	.32	29.8	33.47	.31	41.8	50.44	.63	10.7	4.87	.32	62.5	17.96	.31	21.2
June 8.7	11.01	.31	31.7	33.78	.31	39.8	51.07	.63	11.5	5.19	.33	64.2	18.27	.31	23.2
18.7	11.32	.31	33.7	34.10	.31	37.9	51.70	.59	12.8	5.52	.33	66.2	18.58	.31	25.2
28.7	11.63	.29	35.9	34.41	.30	36.0	52.29	.56	14.7	5.84	.30	68.4	18.89	.30	27.2
July 8.7	11.92	.27	38.2	34.71	.27	34.2	52.85	.50	17.0	6.14	.28	70.7	19.19	.28	29.3
18.6	12.19	.23	40.5	34.98	.25	32.5	53.35	.43	19.8	6.42	.25	73.2	19.47	.24	31.4
28.6	12.42	.20	42.7	35.23	.21	31.1	53.78	.36	22.8	6.67	.22	75.7	19.71	.22	33.3
Aug. 7.6	12.62	.15	44.9	35.44	.17	29.9	54.14	.28	26.2	6.89	.17	78.2	19.93	.18	35.1
17.6	12.77	.12	46.9	35.61	.14	28.9	54.42	.19	29.7	7.06	.13	80.6	20.11	.14	36.7
27.5	12.89	.08	48.8	35.75	.09	28.2	54.61	.10	33.3	7.19	.09	82.9	20.25	.10	38.2
Sept. 6.5	12.97	.03	50.5	35.84	.05	27.8	54.71	.01	37.0	7.28	.05	85.0	20.35	.07	39.4
16.5	13.00	.00	51.9	35.89	.01	27.6	54.72	.08	40.6	7.33	.01	87.0	20.42	.02	40.3
26.5	13.00	.03	53.2	35.90	.02	27.6	54.64	.16	44.1	7.34	.02	88.7	20.44	.01	41.1
Oct. 6.4	12.97	.07	54.2	35.88	.05	27.8	54.48	.23	47.5	7.32	.06	90.2	20.43	.04	41.6
16.4	12.90	.09	54.9	35.83	.08	28.2	54.25	.30	50.6	7.26	.08	91.4	20.39	.07	41.9
26.4	12.81	.11	55.4	35.75	.09	28.7	53.95	.37	53.3	7.18	.11	92.4	20.32	.08	42.0
Nov. 5.3	12.70	.11	55.6	35.66	.11	29.3	53.58	.41	55.7	7.07	.11	93.1	20.24	.10	41.9
15.3	12.59	.13	55.6	35.55	.11	30.0	53.17	.46	57.6	6.96	.13	93.4	20.14	.11	41.6
25.3	12.46	.12	55.3	35.44	.12	30.7	52.71	.48	59.0	6.83	.14	93.4	20.03	.11	41.2
Dec. 5.3	12.34	.12	54.8	35.32	.11	31.4	52.23	.49	59.8	6.69	.13	93.2	19.92	.11	40.6
15.2	12.22	.12	54.1	35.21	.10	32.1	51.74	.50	60.0	6.56	.13	92.6	19.81	.11	39.9
25.2	12.10	.10	53.2	35.11	.09	32.8	51.24	.47	59.7	6.43	.12	91.8	19.70	.10	39.2
35.2	12.00		52.1	35.02		33.4	50.77		58.7	6.31		90.7	19.60		38.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	λ Andromedæ.		ι Piscium.		γ Cephei.		β Aquarii.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 23 33	° ' " +45 57	h m 23 35	° ' " + 5 7	h m 23 35	° ' " +77 6	h m 23 39	° ' " -18 46
	s	"	s	"	s	"	s	"
Jan. 1.2	2.18	41.8	11.72	33.5	32.30	80.7	24.43	89.5
11.2	1.98	40.5	11.62	32.7	31.41	79.8	24.32	89.8
21.2	1.79	38.9	11.53	31.8	30.58	78.3	24.23	89.8
31.1	1.62	36.9	11.46	31.0	29.84	76.3	24.15	89.6
Feb. 10.1	1.49	34.6	11.40	30.2	29.22	73.9	24.10	89.1
20.1	1.40	32.2	11.37	29.6	28.75	71.1	24.07	88.4
Mar. 1.0	1.36	29.8	11.37	29.1	28.44	68.1	24.07	87.5
11.0	1.36	27.4	11.40	28.8	28.30	64.9	24.10	86.3
21.0	1.43	25.1	11.47	28.7	28.36	61.8	24.16	84.9
31.0	1.55	23.1	11.57	28.9	28.59	58.8	24.26	83.3
Apr. 9.9	1.72	21.4	11.71	29.3	29.00	56.1	24.41	81.5
19.9	1.96	20.1	11.89	30.1	29.58	53.8	24.59	79.6
29.9	2.24	19.2	12.11	31.1	30.29	51.9	24.81	77.5
May 9.9	2.56	18.8	12.35	32.4	31.12	50.5	25.06	75.3
19.8	2.92	19.0	12.63	33.9	32.04	49.7	25.34	73.1
29.8	3.30	19.6	12.93	35.6	33.02	49.4	25.64	70.9
June 8.8	3.63	20.7	13.24	37.5	34.02	49.8	25.96	68.8
18.7	4.09	22.3	13.55	39.5	35.03	50.7	26.29	66.8
28.7	4.48	24.3	13.86	41.6	36.01	52.2	26.62	64.9
July 8.7	4.85	26.6	14.17	43.7	36.93	54.1	26.94	63.3
18.6	5.19	29.2	14.45	45.7	37.77	56.5	27.24	62.0
28.6	5.50	32.1	14.71	47.6	38.51	59.4	27.51	60.9
Aug. 7.6	5.77	35.1	14.94	49.4	39.14	62.5	27.76	60.2
17.6	5.98	38.2	15.13	50.9	39.63	65.9	27.97	59.8
27.5	6.15	41.4	15.28	52.3	39.99	69.6	28.14	59.7
Sept. 6.5	6.27	44.5	15.39	53.5	40.21	73.3	28.27	59.9
16.5	6.33	47.5	15.47	54.4	40.29	77.1	28.35	60.4
26.5	6.35	50.3	15.51	55.1	40.22	80.8	28.39	61.1
Oct. 6.4	6.32	53.0	15.51	55.5	40.00	84.5	28.40	62.0
16.4	6.25	55.4	15.48	55.8	39.65	87.9	28.37	63.1
26.4	6.14	57.5	15.42	55.8	39.17	91.1	28.31	64.2
Nov. 5.4	6.00	59.2	15.35	55.7	38.57	93.9	28.23	65.4
15.3	5.83	60.5	15.26	55.4	37.87	96.4	28.13	66.5
25.3	5.64	61.4	15.16	55.0	37.08	98.3	28.02	67.5
Dec. 5.3	5.43	61.8	15.05	54.4	36.22	99.6	27.90	68.4
15.3	5.22	61.8	14.94	53.7	35.32	100.4	27.78	69.2
25.2	5.01	61.3	14.83	53.0	34.40	100.5	27.66	69.7
35.2	4.80	60.4	14.73	52.2	33.48	100.0	27.55	70.1

FIXED STARS, 1908.

399

(CONSTANTS OF STRUVE AND PETERS.)

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	♄ Sculptoris.		γ Octantis.		Groombridge 4163.		ω Piscium.	
	Right Ascension.	Declination South.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 23 44	° ' " -28 38	h m 23 46	° ' " -82 31	h m 23 50	° ' " +73 53	h m 23 54	° ' " + 6 21
	s	"	s	"	s	"	s	"
Jan. 1.2	6.61	38.8	38.93	74.7	19.27	66.4	33.95	8.9
11.2	6.49 .12	38.7 0.1	37.54 1.39	73.1 1.6	18.56 .71	65.7 0.7	33.84 .11	8.1 0.8
21.2	6.38 .11	38.4 0.3	36.29 1.25	70.9 2.2	17.90 .66	64.4 1.3	33.74 .10	7.2 0.9
31.1	6.30 .08	37.7 0.7	35.22 1.07	68.2 2.7	17.30 .60	62.5 1.9	33.65 .09	6.4 0.8
Feb. 10.1	6.23 .07	36.8 0.9	34.35 0.87	65.1 3.1	16.78 .52	60.2 2.3	33.58 .07	5.7 0.7
	.04	1.2	0.64	3.4	.41	2.7	.04	0.7
20.1	6.19	35.6	33.71	61.7	16.37	57.5	33.54	5.0
Mar. 1.1	6.18 .01	34.1 1.5	33.31 0.40	58.1 3.6	16.09 .28	54.6 2.9	33.52 .02	4.5 0.5
11.0	6.20 .02	32.4 1.7	33.16 0.15	54.3 3.8	15.95 .14	51.5 3.1	33.53 .01	4.1 0.4
21.0	6.26 .06	30.4 2.0	33.27 0.11	50.5 3.8	15.95 .00	48.4 3.1	33.57 .04	4.0 0.1
31.0	6.36 .10	28.3 2.1	33.63 0.36	46.6 3.9	16.11 .16	45.5 2.9	33.65 .08	4.1 0.1
	.15	2.3	0.60	3.7	.30	2.7	.13	0.4
Apr. 10.0	6.51	26.0	34.23	42.9	16.41	42.8	33.78	4.5
19.9	6.69 .18	23.6 2.4	35.07 0.84	39.4 3.5	16.84 .43	40.4 2.4	33.94 .16	5.2 0.7
29.9	6.92 .23	21.1 2.5	36.13 1.06	36.1 3.3	17.39 .55	38.5 1.9	34.14 .20	6.1 0.9
May 9.9	7.18 .26	18.6 2.5	37.38 1.25	33.1 3.0	18.05 .66	37.0 1.5	34.37 .23	7.3 1.2
19.8	7.47 .29	16.2 2.4	38.81 1.43	30.6 2.5	18.78 .73	36.1 0.9	34.64 .27	8.8 1.5
	.32	2.4	1.57	2.1	.80	0.3	.29	1.7
29.8	7.79	13.8	40.38	28.5	19.58	35.8	34.93	10.5
June 8.8	8.12 .33	11.7 2.1	42.05 1.67	26.8 1.7	20.41 .83	36.0 0.2	35.23 .30	12.3 1.8
18.8	8.47 .35	9.7 2.0	43.79 1.74	25.7 1.1	21.25 .84	36.8 0.8	35.55 .32	14.3 2.0
28.7	8.82 .35	8.0 1.7	45.55 1.76	25.2 0.5	22.07 .82	38.1 1.3	35.86 .31	16.4 2.1
July 8.7	9.16 .34	6.6 1.4	47.29 1.74	25.2 0.0	22.85 .78	40.0 1.9	36.17 .31	18.5 2.1
	.32	1.0	1.67	0.6	.73	2.3	.29	2.0
18.7	9.48	5.6	48.96	25.8	23.58	42.3	36.46	20.5
28.6	9.78 .30	4.9 0.7	50.51 1.55	26.9 1.1	24.24 .66	45.0 2.7	36.73 .27	22.5 2.0
Ang. 7.6	10.04 .26	4.6 0.3	51.89 1.38	28.6 1.7	24.80 .56	48.0 3.0	36.97 .24	24.3 1.8
17.6	10.27 .23	4.7 0.1	53.07 1.18	30.7 2.1	25.27 .47	51.4 3.4	37.18 .21	26.0 1.7
27.6	10.45 .18	5.1 0.4	54.00 0.93	33.2 2.5	25.63 .36	54.9 3.5	37.35 .17	27.4 1.4
	.14	0.8	0.65	2.8	.25	3.7	.13	1.3
Sept. 6.5	10.59	5.9	54.65	36.0	25.88	58.6	37.48	28.7
16.5	10.69 .10	6.9 1.0	55.01 0.36	38.9 2.9	26.01 .13	62.3 3.7	37.57 .09	29.7 1.0
26.5	10.74 .05	8.2 1.3	55.06 0.05	42.0 3.1	26.02 .01	66.0 3.7	37.63 .06	30.5 0.8
Oct. 6.5	10.74 .00	9.6 1.4	54.80 0.26	45.1 3.1	25.92 .10	69.7 3.7	37.65 .02	31.1 0.6
16.4	10.71 .03	11.1 1.5	54.24 0.56	48.0 2.9	25.71 .21	73.1 3.4	37.64 .01	31.4 0.3
	.06	1.6	0.84	2.6	.32	3.2	.04	0.1
26.4	10.65	12.7	53.40	50.6	25.39	76.3	37.60	31.5
Nov. 5.4	10.56 .09	14.2 1.5	52.32 1.08	52.8 2.2	24.97 .42	79.2 2.9	37.54 .06	31.5 0.0
15.4	10.45 .11	15.6 1.4	51.05 1.27	54.6 1.8	24.47 .50	81.7 2.5	37.46 .08	31.2 0.3
25.3	10.32 .13	16.9 1.3	49.63 1.42	55.8 1.2	23.89 .58	83.7 2.0	37.37 .09	30.9 0.3
Dec. 5.3	10.19 .13	17.9 1.0	48.12 1.51	56.4 0.6	23.25 .64	85.1 1.4	37.27 .10	30.4 0.5
	.14	0.8	1.55	0.0	.69	0.9	.11	0.6
15.3	10.05	18.7	46.57	56.4	22.56	86.0	37.16	29.8
25.2	9.92 .13	19.1 0.4	45.04 1.53	55.7 0.7	21.85 .71	86.3 0.3	37.05 .11	29.1 0.7
35.2	9.79 .13	19.3 0.2	43.58 1.46	54.5 1.2	21.14 .71	86.0 0.3	36.95 .10	28.3 0.8

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
Jan. 1	18 43 6.66	7.26	-23 4 49.5	48.9	11.033	+ 11.38	+ 3 16.48	16 17.85	1 11.08	18 39 50.24
2	18 47 31.83	32.51	23 0 2.6	1.9	11.041	12.52	3 45.10	16 17.85	1 11.04	18 43 46.80
3	18 51 56.65	57.42	22 54 48.2	47.3	11.027	13.66	4 13.39	16 17.85	1 10.99	18 47 43.35
4	18 56 21.10	21.95	22 49 6.4	5.4	11.011	14.80	4 41.31	16 17.85	1 10.94	18 51 39.91
5	19 0 45.18	46.12	22 42 57.4	56.1	10.994	15.94	5 8.83	16 17.85	1 10.89	18 55 36.47
6	19 5 8.84	9.86	-22 36 21.2	19.7	10.975	+ 17.06	+ 5 35.93	16 17.84	1 10.82	18 59 33.03
7	19 9 32.03	33.13	22 29 18.2	16.5	10.955	18.18	6 2.58	16 17.82	1 10.76	19 3 29.58
8	19 13 54.75	55.93	22 21 48.7	46.7	10.934	19.28	6 28.73	16 17.80	1 10.70	19 7 26.14
9	19 18 16.93	18.19	22 13 52.8	50.6	10.913	20.37	6 54.36	16 17.77	1 10.64	19 11 22.70
10	19 22 38.57	39.90	22 5 30.6	28.1	10.891	21.46	7 19.45	16 17.74	1 10.56	19 15 19.26
11	19 26 59.63	61.03	-21 56 42.6	39.8	10.866	+ 22.53	+ 7 43.96	16 17.71	1 10.48	19 19 15.81
12	19 31 20.10	21.57	21 47 28.9	25.8	10.840	23.60	8 7.88	16 17.67	1 10.40	19 23 12.37
13	19 35 39.96	41.50	21 37 49.9	46.5	10.814	24.65	8 31.19	16 17.63	1 10.32	19 27 8.93
14	19 39 59.17	60.78	21 27 45.7	41.9	10.787	25.69	8 53.86	16 17.58	1 10.24	19 31 5.49
15	19 44 17.74	19.40	21 17 16.7	12.6	10.759	26.72	9 15.87	16 17.52	1 10.15	19 35 2.04
16	19 48 35.63	37.35	-21 6 23.1	18.7	10.731	+ 27.73	+ 9 37.20	16 17.46	1 10.06	19 38 58.60
17	19 52 52.84	54.62	20 55 5.5	0.8	10.702	28.73	9 57.85	16 17.39	1 9.97	19 42 55.16
18	19 57 9.36	11.20	20 43 23.8	18.7	10.673	29.72	10 17.82	16 17.31	1 9.87	19 46 51.71
19	20 1 25.16	27.05	20 31 18.6	13.2	10.644	30.70	10 37.06	16 17.23	1 9.77	19 50 48.27
20	20 5 40.23	42.17	20 18 50.2	44.5	10.614	31.66	10 55.57	16 17.14	1 9.66	19 54 44.83
21	20 9 54.59	56.58	-20 5 58.8	52.8	10.583	+ 32.61	+ 11 13.37	16 17.05	1 9.56	19 58 41.38
22	20 14 8.21	10.25	19 52 44.9	38.5	10.552	33.55	11 30.42	16 16.95	1 9.46	20 2 37.94
23	20 18 21.06	23.14	19 39 8.8	2.1	10.521	34.46	11 46.71	16 16.84	1 9.35	20 6 34.50
24	20 22 33.17	35.28	19 25 10.8	3.8	10.489	35.36	12 2.25	16 16.73	1 9.25	20 10 31.06
25	20 26 44.50	46.64	19 10 51.2	43.8	10.456	36.25	12 17.03	16 16.61	1 9.14	20 14 27.61
26	20 30 55.05	57.22	-18 56 10.7	3.0	10.423	+ 37.13	+ 12 31.03	16 16.49	1 9.03	20 18 24.17
27	20 35 4.83	7.04	18 41 9.3	1.3	10.391	38.00	12 44.24	16 16.37	1 8.92	20 22 20.72
28	20 39 13.82	16.06	18 25 47.4	39.1	10.358	38.84	12 56.66	16 16.24	1 8.81	20 26 17.28
29	20 43 22.00	24.27	18 9 65.6	57.0	10.325	39.66	13 8.28	16 16.11	1 8.69	20 30 13.84
30	20 47 29.38	31.67	17 53 64.0	55.1	10.292	40.47	13 19.12	16 15.97	1 8.57	20 34 10.39
31	20 51 35.99	38.30	-17 37 43.2	34.0	10.258	+ 41.26	+ 13 29.15	16 15.83	1 8.46	20 38 6.95
Feb. 1	20 55 41.76	44.09	17 20 63.6	54.1	10.224	42.03	13 38.37	16 15.69	1 8.34	20 42 3.50
2	20 59 46.72	49.06	17 3 65.5	55.7	10.190	42.80	13 46.76	16 15.55	1 8.22	20 46 0.06
3	21 3 50.85	53.20	16 46 49.6	39.5	10.156	43.54	13 54.33	16 15.40	1 8.11	20 49 56.61
4	21 7 54.15	56.51	16 29 16.0	5.7	10.121	44.26	14 1.07	16 15.25	1 7.98	20 53 53.17
5	21 11 56.63	59.00	-16 11 25.2	14.6	10.086	+ 44.97	+ 14 6.99	16 15.10	1 7.87	20 57 49.72
6	21 15 58.28	60.66	15 53 17.7	6.9	10.052	45.66	14 12.06	16 14.94	1 7.75	21 1 46.28
7	21 19 59.09	61.47	15 34 53.9	42.9	10.017	46.32	14 16.31	16 14.78	1 7.65	21 5 42.83
8	21 23 59.09	61.47	15 16 14.2	3.0	9.983	46.97	14 19.75	16 14.62	1 7.54	21 9 39.39
9	21 27 58.27	60.65	14 57 19.1	7.7	9.949	47.60	14 22.38	16 14.45	1 7.42	21 13 35.94
10	21 31 56.63	59.01	-14 37 69.0	57.4	9.915	+ 48.22	+ 14 24.17	16 14.28	1 7.31	21 17 32.50
11	21 35 54.19	56.57	14 18 44.2	32.4	9.882	48.83	14 25.17	16 14.10	1 7.20	21 21 29.05
12	21 39 50.96	53.34	13 58 65.2	53.3	9.849	49.41	14 25.38	16 13.92	1 7.09	21 25 25.60
13	21 43 46.95	49.32	13 39 12.4	0.3	9.816	49.98	14 24.80	16 13.73	1 6.98	21 29 22.16
14	21 47 42.16	44.52	13 18 66.4	54.3	9.784	50.53	14 23.45	16 13.54	1 6.88	21 33 18.72
15	21 51 36.62	38.96	-12 58 47.3	35.1	9.753	+ 51.07	+ 14 21.36	16 13.35	1 6.77	21 37 15.27
16	21 55 30.32	32.64	12 38 15.8	3.5	9.723	+ 51.58	+ 14 18.51	16 13.15	1 6.67	21 41 11.83

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.19 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
Feb. 16	21 55 30.32	32.64	-12 38 15.8	3.5	9.723	+51.58	+14 18.51	16 13.15	1 6.67	21 41 11.83
17	21 59 23.31	25.61	12 17 32.0	19.7	9.693	52.07	14 14.93	16 12.95	1 6.57	21 45 8.38
18	22 3 15.60	17.88	11 56 36.6	24.2	9.664	52.55	14 10.65	16 12.75	1 6.47	21 49 4.93
19	22 7 7.18	9.44	11 35 29.7	17.3	9.635	53.01	14 5.67	16 12.53	1 6.37	21 53 1.49
20	22 10 58.09	60.33	11 13 72.1	59.6	9.607	53.46	14 0.01	16 12.31	1 6.27	21 56 58.04
21	22 14 48.34	50.56	-10 52 44.0	31.5	9.580	+53.89	+13 53.70	16 12.09	1 6.17	22 0 54.60
22	22 18 37.94	40.15	10 30 65.6	53.1	9.554	54.31	13 46.75	16 11.86	1 6.07	22 4 51.15
23	22 22 26.92	29.09	10 9 17.4	5.0	9.529	54.71	13 39.18	16 11.63	1 5.98	22 8 47.70
24	22 26 15.27	17.41	9 47 19.9	7.5	9.504	55.09	13 30.99	16 11.40	1 5.89	22 12 44.26
25	22 30 3.06	5.17	9 25 13.3	0.9	9.479	55.45	13 22.20	16 11.17	1 5.80	22 16 40.81
26	22 33 50.27	52.35	-9 2 58.3	46.0	9.455	+55.79	+13 12.83	16 10.94	1 5.71	22 20 37.36
27	22 37 36.92	38.97	8 40 34.8	22.6	9.432	56.12	13 2.91	16 10.70	1 5.63	22 24 33.92
28	22 41 23.02	25.04	8 17 63.8	51.7	9.410	56.44	12 52.46	16 10.46	1 5.55	22 28 30.47
29	22 45 8.59	10.58	7 55 25.2	13.2	9.388	56.74	12 41.47	16 10.22	1 5.47	22 32 27.02
Mar. 1	22 48 53.63	55.59	7 32 39.8	27.9	9.367	57.03	12 29.97	16 9.97	1 5.40	22 36 23.58
2	22 52 38.18	40.10	-7 9 47.7	35.9	9.346	+57.29	+12 17.96	16 9.73	1 5.33	22 40 20.13
3	22 56 22.23	24.11	6 46 49.6	38.0	9.326	57.53	12 5.46	16 9.48	1 5.26	22 44 16.68
4	23 0 5.83	7.68	6 23 45.8	34.4	9.306	57.76	11 52.49	16 9.24	1 5.19	22 48 13.24
5	23 3 48.96	50.77	6 0 36.7	25.6	9.287	57.97	11 39.06	16 8.99	1 5.12	22 52 9.79
6	23 7 31.62	33.39	5 37 22.8	11.9	9.269	58.17	11 25.17	16 8.74	1 5.07	22 56 6.34
7	23 11 13.87	15.60	-5 13 64.4	53.6	9.251	+58.35	+11 10.87	16 8.49	1 5.01	23 0 2.90
8	23 14 55.70	57.40	4 50 41.8	31.2	9.235	58.51	10 56.15	16 8.23	1 4.95	23 3 59.45
9	23 18 37.15	38.79	4 27 15.6	5.0	9.219	58.66	10 41.05	16 7.98	1 4.90	23 7 56.00
10	23 22 18.24	19.84	4 3 46.2	36.0	9.204	58.79	10 25.59	16 7.72	1 4.85	23 11 52.55
11	23 25 58.97	60.53	3 40 13.8	3.9	9.189	58.90	10 9.76	16 7.47	1 4.80	23 15 49.11
12	23 29 39.36	40.88	-3 16 39.0	29.3	9.176	+59.00	+9 53.60	16 7.21	1 4.74	23 19 45.66
13	23 33 19.45	20.92	2 52 61.9	52.5	9.165	59.10	9 37.14	16 6.95	1 4.70	23 23 42.21
14	23 36 59.26	60.69	2 29 23.0	13.8	9.154	59.18	9 20.39	16 6.69	1 4.66	23 27 38.76
15	23 40 38.81	40.19	2 5 42.7	33.8	9.143	59.23	9 3.38	16 6.42	1 4.63	23 31 35.32
16	23 44 18.11	19.44	1 41 61.5	52.9	9.134	59.25	8 46.13	16 6.16	1 4.60	23 35 31.87
17	23 47 57.19	58.48	-1 18 19.5	11.1	9.126	+59.26	+8 28.68	16 5.89	1 4.57	23 39 28.42
18	23 51 36.07	37.32	0 54 37.1	29.0	9.119	59.26	8 11.02	16 5.62	1 4.54	23 43 24.98
19	23 55 14.79	15.99	0 30 54.7	46.9	9.112	59.26	7 53.17	16 5.34	1 4.52	23 47 21.53
20	23 58 53.37	54.53	-0 7 12.6	5.1	9.105	59.23	7 35.21	16 5.07	1 4.50	23 51 18.08
21	0 2 31.84	32.95	+0 16 28.9	36.1	9.100	59.20	7 17.13	16 4.79	1 4.48	23 55 14.63
22	0 6 10.21	11.28	+0 40 9.2	16.1	9.098	+59.16	+6 58.94	16 4.51	1 4.46	23 59 11.18
23	0 9 48.51	49.53	1 3 48.3	54.9	9.096	59.10	6 40.68	16 4.23	1 4.45	0 3 7.74
24	0 13 26.74	27.72	1 27 25.7	32.0	9.094	59.04	6 22.37	16 3.95	1 4.44	0 7 4.29
25	0 17 4.94	5.88	1 51 1.0	7.0	9.092	58.93	6 4.03	16 3.66	1 4.44	0 11 0.84
26	0 20 43.14	44.03	2 14 34.0	39.7	9.092	58.82	5 45.67	16 3.37	1 4.44	0 14 57.40
27	0 24 21.34	22.17	+2 38 4.3	9.6	9.093	+58.70	+5 27.32	16 3.09	1 4.44	0 18 53.95
28	0 27 59.57	60.35	3 1 31.5	36.5	9.094	58.57	5 9.01	16 2.81	1 4.44	0 22 50.50
29	0 31 37.85	38.58	3 24 55.2	59.8	9.097	58.42	4 50.74	16 2.53	1 4.44	0 26 47.05
30	0 35 16.19	16.88	3 48 15.2	19.6	9.100	58.25	4 32.52	16 2.25	1 4.45	0 30 43.61
31	0 38 54.61	55.25	4 11 31.0	35.1	9.103	58.07	4 14.39	16 1.97	1 4.46	0 34 40.16
Apr. 1	0 42 33.11	33.70	+4 34 42.2	46.0	9.107	+57.86	+3 56.35	16 1.69	1 4.47	0 38 36.71
2	0 46 11.72	12.27	+4 57 48.5	52.0	9.112	+57.64	+3 38.41	16 1.41	1 4.49	0 42 33.26

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0^s.18 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.			Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.		Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s		° ' "	"	s	"	m s	' "	m s	h m s
Apr. 1	0 42 33.11	33.70	+	4 34 42.2	46.0	9.107	+ 57.86	+ 3 56.35	16 1.69	1 4.47	0 38 36.71
2	0 46 11.72	12.27		4 57 48.5	52.0	9.112	57.64	3 38.41	16 1.41	1 4.49	0 42 33.26
3	0 49 50.45	50.96		5 20 49.4	52.6	9.116	57.41	3 20.60	16 1.13	1 4.51	0 46 29.82
4	0 53 29.32	29.78		5 43 44.6	47.5	9.122	57.16	3 2.93	16 0.86	1 4.54	0 50 26.37
5	0 57 8.35	8.76		6 6 34.0	36.6	9.129	56.89	2 45.40	16 0.59	1 4.57	0 54 22.92
6	1 0 47.55	47.92	+	6 29 16.9	19.2	9.137	+ 56.62	+ 2 28.04	16 0.32	1 4.60	0 58 19.48
7	1 4 26.94	27.27		6 51 53.0	55.1	9.145	56.34	2 10.88	16 0.05	1 4.63	1 2 16.03
8	1 8 6.52	6.81		7 14 22.0	23.8	9.153	56.03	1 53.93	15 59.78	1 4.66	1 6 12.58
9	1 11 46.34	46.59		7 36 43.5	45.1	9.163	55.70	1 37.19	15 59.51	1 4.70	1 10 9.14
10	1 15 26.41	26.61		7 58 57.3	58.6	9.174	55.38	1 20.70	15 59.25	1 4.75	1 14 5.69
11	1 19 6.72	6.88	+	8 21 3.0	4.0	9.185	+ 55.05	+ 1 4.47	15 58.98	1 4.79	1 18 2.24
12	1 22 47.30	47.42		8 43 0.0	0.6	9.197	54.70	0 48.51	15 58.71	1 4.83	1 21 58.80
13	1 26 28.18	28.26		9 4 48.4	48.9	9.210	54.32	0 32.84	15 58.44	1 4.88	1 25 55.35
14	1 30 9.38	9.42		9 26 27.6	27.8	9.223	53.93	0 17.49	15 58.18	1 4.93	1 29 51.90
15	1 33 50.91	50.91		9 47 57.4	57.4	9.237	53.54	+ 0 2.46	15 57.91	1 4.98	1 33 48.46
16	1 37 32.77	32.73	+	10 9 17.4	17.1	9.252	+ 53.13	- 0 12.23	15 57.64	1 5.03	1 37 45.01
17	1 41 15.02	14.94		10 30 27.5	27.0	9.268	52.71	0 26.53	15 57.37	1 5.08	1 41 41.56
18	1 44 57.66	57.55		10 51 27.1	26.4	9.285	52.27	0 40.46	15 57.11	1 5.14	1 45 38.12
19	1 48 40.70	40.55		11 12 16.0	15.1	9.302	51.82	0 53.97	15 56.84	1 5.20	1 49 34.67
20	1 52 24.16	23.98		11 32 53.8	52.7	9.320	51.35	1 7.06	15 56.58	1 5.26	1 53 31.22
21	1 56 8.06	7.84	+	11 53 20.4	19.1	9.339	+ 50.87	- 1 19.72	15 56.31	1 5.32	1 57 27.78
22	1 59 52.41	52.16		12 13 35.3	33.9	9.358	50.38	1 31.91	15 56.05	1 5.38	2 1 24.33
23	2 3 37.25	36.97		12 33 38.3	36.8	9.377	49.87	1 43.63	15 55.79	1 5.45	2 5 20.89
24	2 7 22.55	22.24		12 53 29.3	27.7	9.397	49.36	1 54.89	15 55.53	1 5.52	2 9 17.44
25	2 11 8.35	8.01		13 13 7.5	5.8	9.418	48.82	2 5.65	15 55.28	1 5.59	2 13 13.99
26	2 14 54.64	54.28	+	13 32 32.7	30.9	9.439	+ 48.27	- 2 15.90	15 55.03	1 5.66	2 17 10.55
27	2 18 41.45	41.08		13 51 44.7	42.7	9.460	47.72	2 25.64	15 54.78	1 5.73	2 21 7.10
28	2 22 28.79	28.40		14 10 43.3	41.3	9.482	47.15	2 34.86	15 54.53	1 5.81	2 25 3.66
29	2 26 16.64	16.22		14 29 27.9	25.8	9.504	46.57	2 43.55	15 54.28	1 5.88	2 29 0.21
30	2 30 5.02	4.57		14 47 58.3	56.1	9.526	45.96	2 51.73	15 54.03	1 5.96	2 32 56.77
May 1	2 33 53.93	53.46	+	15 6 14.1	11.9	9.549	+ 45.35	- 2 59.37	15 53.79	1 6.04	2 36 53.32
2	2 37 43.38	42.89		15 24 14.8	12.5	9.571	44.72	3 6.49	15 53.56	1 6.12	2 40 49.88
3	2 41 33.35	32.84		15 41 60.3	57.9	9.593	44.06	3 13.08	15 53.33	1 6.20	2 44 46.43
4	2 45 23.87	23.34		15 59 30.1	27.7	9.616	43.39	3 19.13	15 53.10	1 6.28	2 48 42.99
5	2 49 14.94	14.40		16 16 43.9	41.5	9.639	42.72	3 24.61	15 52.88	1 6.36	2 52 39.54
6	2 53 6.55	5.99	+	16 33 41.5	39.0	9.662	+ 42.04	- 3 29.56	15 52.66	1 6.44	2 56 36.10
7	2 56 58.70	58.13		16 50 22.5	20.0	9.685	41.35	3 33.96	15 52.45	1 6.52	3 0 32.65
8	3 0 51.42	50.84		17 6 46.6	44.1	9.708	40.64	3 37.80	15 52.24	1 6.60	3 4 29.21
9	3 4 44.68	44.09		17 22 53.6	51.1	9.731	39.92	3 41.09	15 52.03	1 6.68	3 8 25.76
10	3 8 38.51	37.91		17 38 43.0	40.6	9.754	39.19	3 43.79	15 51.82	1 6.76	3 12 22.32
11	3 12 32.89	32.28	+	17 54 14.7	12.3	9.777	+ 38.44	- 3 45.98	15 51.61	1 6.84	3 16 18.87
12	3 16 27.82	27.20		18 9 28.2	25.8	9.800	37.68	3 47.62	15 51.40	1 6.93	3 20 15.43
13	3 20 23.33	22.71		18 24 23.4	21.0	9.823	36.92	3 48.67	15 51.19	1 7.02	3 24 11.99
14	3 24 19.40	18.77		18 38 60.2	57.9	9.847	36.15	3 49.15	15 50.99	1 7.10	3 28 8.54
15	3 28 16.03	15.40		18 53 18.0	15.7	9.871	35.36	3 49.07	15 50.79	1 7.18	3 32 5.10
16	3 32 13.22	12.59	+	19 7 16.7	14.3	9.896	+ 34.55	- 3 48.44	15 50.59	1 7.26	3 36 1.65
17	3 36 10.98	10.35	+	19 20 55.9	53.7	9.920	+ 33.71	3 47.23	15 50.40	1 7.34	3 39 58.21

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.18 from the sidereal interval.

[Eph 08]

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	"	m s	h m s
May 17	3 36 10.98	10.35	+19 20 55.9	53.7	9.920	+33.73	-3 47.23	15 50.40	1 7.34	3 39 58.21
18	3 40 9.31	8.68	19 34 15.5	13.4	9.944	32.90	3 45.47	15 50.21	1 7.42	3 43 54.77
19	3 44 8.20	7.58	19 47 15.2	13.2	9.967	32.06	3 43.14	15 50.02	1 7.50	3 47 51.32
20	3 48 7.67	7.06	19 59 54.8	52.9	9.990	31.22	3 40.23	15 49.83	1 7.58	3 51 47.88
21	3 52 7.69	7.09	20 12 14.1	12.2	10.013	30.38	3 36.77	15 49.64	1 7.66	3 55 44.44
22	3 56 8.26	7.68	+20 24 12.7	10.9	10.036	+29.52	-3 32.74	15 49.46	1 7.73	3 59 40.99
23	4 0 9.38	8.81	20 35 50.5	48.8	10.059	28.65	3 28.17	15 49.28	1 7.80	4 3 37.55
24	4 4 11.04	10.48	20 47 7.2	5.6	10.080	27.76	3 23.05	15 49.10	1 7.87	4 7 34.10
25	4 8 13.24	12.70	20 58 2.5	1.0	10.101	26.86	3 17.41	15 48.93	1 7.94	4 11 30.66
26	4 12 15.95	15.42	21 8 36.4	35.0	10.122	25.94	3 11.27	15 48.77	1 8.01	4 15 27.22
27	4 16 19.15	18.63	+21 18 48.4	47.1	10.143	+25.02	-3 4.63	15 48.61	1 8.07	4 19 23.78
28	4 20 22.84	22.34	21 28 38.4	37.2	10.163	24.10	2 57.50	15 48.45	1 8.14	4 23 20.33
29	4 24 27.00	26.52	21 38 6.1	5.0	10.182	23.18	2 49.90	15 48.30	1 8.20	4 27 16.89
30	4 28 31.60	31.14	21 47 11.3	10.3	10.200	22.24	2 41.85	15 48.15	1 8.26	4 31 13.44
31	4 32 36.63	36.19	21 55 53.8	52.9	10.218	21.29	2 33.40	15 48.01	1 8.32	4 35 10.00
June 1	4 36 42.06	41.65	+22 4 13.5	12.6	10.234	+20.33	-2 24.52	15 47.87	1 8.38	4 39 6.56
2	4 40 47.89	47.50	22 12 10.2	9.4	10.250	19.36	2 15.24	15 47.74	1 8.43	4 43 3.12
3	4 44 54.10	53.73	22 19 43.5	42.8	10.265	18.39	2 5.58	15 47.61	1 8.48	4 46 59.67
4	4 49 0.65	0.31	22 26 53.2	52.6	10.279	17.41	1 55.59	15 47.49	1 8.54	4 50 56.23
5	4 53 7.54	7.23	22 33 39.6	39.1	10.292	16.43	1 45.26	15 47.38	1 8.59	4 54 52.79
6	4 57 14.74	14.46	+22 40 2.1	1.7	10.304	+15.45	-1 34.62	15 47.27	1 8.64	4 58 49.35
7	5 1 22.23	21.98	22 46 0.7	0.3	10.316	14.46	1 23.68	15 47.15	1 8.68	5 2 45.90
8	5 5 30.01	29.80	22 51 35.4	35.1	10.328	13.45	1 12.47	15 47.04	1 8.72	5 6 42.46
9	5 9 38.04	37.87	22 56 46.0	45.8	10.339	12.44	1 1.00	15 46.94	1 8.76	5 10 39.02
10	5 13 46.28	46.15	23 1 32.2	32.1	10.349	11.42	0 49.31	15 46.84	1 8.79	5 14 35.58
11	5 17 54.73	54.63	+23 5 54.2	54.1	10.357	+10.41	-0 37.42	15 46.74	1 8.82	5 18 32.13
12	5 22 3.37	3.30	23 9 51.8	51.7	10.365	9.39	0 25.32	15 46.65	1 8.84	5 22 28.69
13	5 26 12.19	12.15	23 13 24.9	24.9	10.371	8.37	0 13.06	15 46.56	1 8.86	5 26 25.25
14	5 30 21.17	21.16	23 16 33.4	33.4	10.377	7.35	-0 0.63	15 46.47	1 8.88	5 30 21.80
15	5 34 30.29	30.32	23 19 17.5	17.5	10.382	6.33	+0 11.93	15 46.39	1 8.90	5 34 18.36
16	5 38 39.54	39.61	+23 21 36.8	36.8	10.388	+5.31	+0 24.61	15 46.31	1 8.92	5 38 14.92
17	5 42 48.89	49.00	23 23 31.4	31.4	10.392	4.28	0 37.40	15 46.23	1 8.93	5 42 11.48
18	5 46 58.33	58.47	23 25 1.3	1.3	10.395	3.25	0 50.29	15 46.16	1 8.94	5 46 8.04
19	5 51 7.82	8.00	23 26 6.5	6.5	10.397	2.22	1 3.23	15 46.10	1 8.94	5 50 4.59
20	5 55 17.37	17.59	23 26 46.9	46.9	10.399	1.18	1 16.22	15 46.04	1 8.94	5 54 1.15
21	5 59 26.93	27.20	+23 27 2.6	2.6	10.399	+0.14	+1 29.22	15 45.98	1 8.94	5 57 57.71
22	6 3 36.49	36.79	23 26 53.5	53.5	10.398	-0.89	1 42.23	15 45.92	1 8.94	6 1 54.27
23	6 7 46.03	46.36	23 26 19.6	19.6	10.396	1.93	1 55.23	15 45.86	1 8.93	6 5 50.82
24	6 11 55.51	55.88	23 25 21.0	20.9	10.393	2.97	2 8.15	15 45.81	1 8.92	6 9 47.38
25	6 16 4.90	5.31	23 23 57.6	57.5	10.389	4.01	2 20.99	15 45.77	1 8.91	6 13 43.94
26	6 20 14.19	14.63	+23 22 9.6	9.4	10.383	-5.04	+2 33.73	15 45.73	1 8.89	6 17 40.50
27	6 24 23.35	23.83	23 19 56.8	56.6	10.376	6.06	2 46.34	15 45.70	1 8.87	6 21 37.06
28	6 28 32.34	32.86	23 17 19.5	19.2	10.369	7.08	2 58.78	15 45.68	1 8.84	6 25 33.61
29	6 32 41.14	41.69	23 14 17.6	17.2	10.361	8.10	3 11.02	15 45.66	1 8.81	6 29 30.17
30	6 36 49.73	50.31	23 10 51.4	50.9	10.352	9.11	3 23.05	15 45.65	1 8.78	6 33 26.73
July 1	6 40 58.09	58.71	+23 7 0.7	0.2	10.343	-10.11	+3 34.85	15 45.64	1 8.75	6 37 23.28
2	6 45 6.18	6.84	+23 2 45.8	45.2	10.331	-11.11	+3 46.37	15 45.63	1 8.71	6 41 19.84

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0.19 from the sidereal interval.

[Eph 08]

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.	
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.					
							h m s	s	° ' "	"	s
July	1	6 40 58.09	58.71	+23 7 0.7	0.2	10.343	-10.11	+3 34.85	15 45.64	1 8.75	6 37 23.28
	2	6 45 6.18	6.84	23 2 45.8	45.2	10.331	11.11	3 46.37	15 45.63	1 8.71	6 41 19.84
	3	6 49 13.98	14.67	22 58 6.7	6.0	10.318	12.11	3 57.61	15 45.63	1 8.67	6 45 16.40
	4	6 53 21.46	22.18	22 53 3.6	2.8	10.304	13.11	4 8.55	15 45.64	1 8.63	6 49 12.96
	5	6 57 28.62	29.37	22 47 36.5	35.6	10.290	14.10	4 19.14	15 45.65	1 8.59	6 53 9.52
	6	7 1 35.43	36.21	+22 41 45.7	44.6	10.275	-15.10	+4 29.40	15 45.67	1 8.54	6 57 6.07
	7	7 5 41.85	42.66	22 35 31.3	30.1	10.260	16.09	4 39.27	15 45.70	1 8.49	7 1 2.63
	8	7 9 47.88	48.72	22 28 53.3	52.0	10.243	17.07	4 48.74	15 45.73	1 8.44	7 4 59.19
	9	7 13 53.51	54.37	22 21 52.1	50.7	10.226	18.04	4 57.81	15 45.76	1 8.38	7 8 55.74
	10	7 17 58.71	59.59	22 14 27.7	26.4	10.208	18.99	5 6.46	15 45.79	1 8.31	7 12 52.30
	11	7 22 3.47	4.37	+22 6 40.4	38.7	10.189	-19.94	+5 14.64	15 45.82	1 8.25	7 16 48.86
	12	7 26 7.77	8.69	21 58 30.3	28.5	10.170	20.89	5 22.35	15 45.86	1 8.18	7 20 45.42
	13	7 30 11.60	12.53	21 49 57.8	55.9	10.150	21.83	5 29.63	15 45.90	1 8.11	7 24 41.97
	14	7 34 14.96	15.91	21 41 2.8	0.8	10.130	22.76	5 36.42	15 45.95	1 8.05	7 28 38.53
	15	7 38 17.84	18.81	21 31 45.5	43.3	10.110	23.68	5 42.73	15 46.00	1 7.98	7 32 35.09
	16	7 42 20.22	21.20	+21 22 6.3	4.0	10.090	-24.58	+5 48.57	15 46.05	1 7.91	7 36 31.64
	17	7 46 22.11	23.10	21 12 5.3	2.9	10.069	25.48	5 53.90	15 46.10	1 7.84	7 40 28.20
	18	7 50 23.49	24.49	21 1 42.7	40.2	10.048	26.38	5 58.73	15 46.16	1 7.77	7 44 24.76
	19	7 54 24.35	25.36	20 50 58.9	56.3	10.026	27.27	6 3.04	15 46.22	1 7.69	7 48 21.32
	20	7 58 24.69	25.71	20 39 53.9	51.1	10.004	28.15	6 6.83	15 46.29	1 7.61	7 52 17.87
	21	8 2 24.49	25.52	+20 28 27.9	25.0	9.981	-29.01	+6 10.08	15 46.36	1 7.53	7 56 14.43
	22	8 6 23.77	24.80	20 16 41.4	38.3	9.958	29.86	6 12.80	15 46.43	1 7.45	8 0 10.98
	23	8 10 22.48	23.51	20 4 34.5	31.3	9.935	30.70	6 14.95	15 46.50	1 7.37	8 4 7.54
	24	8 14 20.62	21.65	19 52 7.3	4.0	9.911	31.54	6 16.53	15 46.59	1 7.29	8 8 4.10
	25	8 18 18.19	19.23	19 39 20.3	16.9	9.888	32.37	6 17.55	15 46.68	1 7.20	8 12 0.65
	26	8 22 15.18	16.22	+19 26 13.6	10.1	9.864	-33.18	+6 17.98	15 46.78	1 7.12	8 15 57.21
	27	8 26 11.58	12.62	19 12 47.4	43.9	9.840	33.98	6 17.83	15 46.89	1 7.03	8 19 53.77
	28	8 30 7.39	8.43	18 58 62.3	58.7	9.815	34.77	6 17.08	15 47.00	1 6.95	8 23 50.32
	29	8 34 2.60	3.63	18 44 58.3	54.6	9.789	35.55	6 15.73	15 47.11	1 6.86	8 27 46.88
	30	8 37 57.20	58.22	18 30 35.9	32.2	9.763	36.32	6 13.77	15 47.23	1 6.78	8 31 43.43
	31	8 41 51.19	52.20	+18 15 55.2	51.4	9.737	-37.07	+6 11.20	15 47.35	1 6.69	8 35 39.99
Aug	1	8 45 44.54	45.54	18 0 56.5	52.7	9.710	37.82	6 8.00	15 47.48	1 6.61	8 39 36.55
	2	8 49 37.29	38.28	17 45 40.1	36.3	9.684	38.54	6 4.18	15 47.62	1 6.52	8 43 33.10
	3	8 53 29.42	30.40	17 30 6.4	2.5	9.658	39.25	5 59.75	15 47.75	1 6.43	8 47 29.66
	4	8 57 20.92	21.88	17 14 15.8	11.9	9.631	39.95	5 54.70	15 47.89	1 6.34	8 51 26.21
	5	9 1 11.81	12.75	+16 58 8.3	4.3	9.605	-40.64	+5 49.04	15 48.04	1 6.25	8 55 22.77
	6	9 5 2.09	3.01	16 41 44.1	40.3	9.578	41.32	5 42.75	15 48.19	1 6.17	8 59 19.32
	7	9 8 51.74	52.64	16 25 4.4	0.5	9.552	41.98	5 35.85	15 48.34	1 6.08	9 3 15.87
	8	9 12 40.80	41.08	16 8 8.6	4.7	9.525	42.63	5 28.35	15 48.49	1 5.99	9 7 12.43
	9	9 16 29.20	30.11	15 50 57.4	53.5	9.500	43.27	5 20.25	15 48.65	1 5.90	9 11 8.99
	10	9 20 17.12	17.04	+15 33 30.0	27.0	9.472	-43.91	+5 11.56	15 48.81	1 5.82	9 15 5.54
	11	9 24 4.40	5.10	15 15 49.5	45.7	9.445	44.53	5 2.28	15 48.97	1 5.74	9 19 2.10
	12	9 27 51.14	51.01	14 57 54.4	40.7	9.418	45.14	4 52.45	15 49.14	1 5.66	9 22 58.69
	13	9 31 37.40	38.04	14 39 43.2	39.6	9.412	45.74	4 42.07	15 49.31	1 5.57	9 26 55.21
	14	9 35 22.02	23.63	14 21 18.8	15.3	9.396	46.32	4 31.14	15 49.47	1 5.50	9 30 51.76
	15	9 39 8.02	8.70	+14 2 40.0	37.2	9.370	-46.90	+4 19.08	15 49.65	1 5.42	9 34 48.32
	16	9 42 52.62	53.27	13 43 42.1	45.7	9.344	47.44	4 7.72	15 49.83	1 5.35	9 38 44.87

NOTE.—For mean time interval of semi-diameter passing mer. line subtract 0.12 from the sidereal interval.
[Eph. 30.]

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	"	m s	h m s
Aug. 16	9 42 52.62	53.27	+ 13 43 49.1	45.8	9.348	- 47.44	+ 4 7.72	15 49.83	1 5.35	9 38 44.87
17	9 46 36.70	37.32	13 24 44.4	41.2	9.327	47.98	3 55.26	15 50.01	1 5.27	9 42 41.43
18	9 50 20.30	20.88	13 5 26.9	23.9	9.307	48.50	3 42.31	15 50.19	1 5.20	9 46 37.98
19	9 54 3.42	3.96	12 45 56.9	54.1	9.287	49.01	3 28.88	15 50.37	1 5.13	9 50 34.54
20	9 57 46.07	46.57	12 26 14.5	11.9	9.268	49.51	3 14.98	15 50.55	1 5.06	9 54 31.09
21	10 1 28.27	28.73	+ 12 6 20.2	17.8	9.249	- 50.00	+ 3 0.61	15 50.74	1 4.99	9 58 27.64
22	10 5 10.02	10.44	11 46 14.4	12.2	9.230	50.48	2 45.80	15 50.93	1 4.92	10 2 24.20
23	10 8 51.33	51.71	11 25 57.4	55.4	9.212	50.94	2 30.55	15 51.13	1 4.86	10 6 20.75
24	10 12 32.21	32.55	11 5 29.4	27.6	9.194	51.38	2 14.87	15 51.33	1 4.80	10 10 17.31
25	10 16 12.67	12.97	10 44 50.6	49.0	9.178	51.81	1 58.78	15 51.54	1 4.73	10 14 13.86
26	10 19 52.73	52.99	+ 10 24 1.6	0.2	9.162	- 52.24	+ 1 42.30	15 51.76	1 4.67	10 18 10.42
27	10 23 32.40	32.62	10 3 2.7	1.5	9.146	52.65	1 25.43	15 51.98	1 4.61	10 22 6.97
28	10 27 11.70	11.87	9 41 54.3	53.3	9.131	53.04	1 8.18	15 52.20	1 4.56	10 26 3.52
29	10 30 50.63	50.76	9 20 36.4	35.7	9.116	53.42	0 50.55	15 52.42	1 4.51	10 30 0.08
30	10 34 29.21	29.29	8 59 9.6	9.2	9.101	53.78	0 32.57	15 52.65	1 4.46	10 33 56.63
31	10 38 7.44	7.47	+ 8 37 34.4	34.3	9.087	- 54.13	+ 0 14.25	15 52.87	1 4.41	10 37 53.18
Sept. 1	10 41 45.34	45.33	8 15 50.9	51.0	9.073	54.47	- 0 4.39	15 53.10	1 4.37	10 41 49.74
2	10 45 22.94	22.88	7 53 59.4	59.6	9.060	54.81	0 23.35	15 53.34	1 4.33	10 45 46.29
3	10 49 0.24	0.14	7 32 0.3	0.8	9.049	55.12	0 42.61	15 53.58	1 4.29	10 49 42.84
4	10 52 37.25	37.11	7 9 53.9	54.8	9.038	55.40	1 2.14	15 53.82	1 4.25	10 53 39.40
5	10 56 14.00	13.80	+ 6 47 40.7	41.9	9.026	- 55.67	- 1 21.92	15 54.06	1 4.21	10 57 35.95
6	10 59 50.50	50.25	6 25 20.9	22.4	9.016	55.94	1 41.96	15 54.30	1 4.18	11 1 32.50
7	11 3 26.78	26.48	6 2 54.7	56.6	9.007	56.20	2 2.23	15 54.55	1 4.15	11 5 29.06
8	11 7 2.86	2.52	5 40 22.8	25.0	8.999	56.44	2 22.70	15 54.80	1 4.13	11 9 25.61
9	11 10 38.77	38.38	5 17 45.2	47.8	8.993	56.67	2 43.34	15 55.05	1 4.11	11 13 22.16
10	11 14 14.53	14.07	+ 4 55 2.3	5.2	8.988	- 56.89	- 3 4.14	15 55.30	1 4.09	11 17 18.72
11	11 17 50.15	49.63	4 32 14.3	17.6	8.983	57.10	3 25.07	15 55.55	1 4.07	11 21 15.27
12	11 21 25.66	25.09	4 9 21.6	25.2	8.979	57.29	3 46.11	15 55.81	1 4.05	11 25 11.82
13	11 25 1.08	0.46	3 46 24.5	28.4	8.975	57.47	4 7.23	15 56.06	1 4.04	11 29 8.37
14	11 28 36.45	35.78	3 23 23.2	27.5	8.973	57.63	4 28.41	15 56.31	1 4.03	11 33 4.93
15	11 32 11.78	11.05	+ 3 0 18.1	22.8	8.972	- 57.78	- 4 49.62	15 56.56	1 4.02	11 37 1.48
16	11 35 47.09	46.31	2 37 9.7	14.7	8.971	57.91	5 10.85	15 56.82	1 4.01	11 40 58.03
17	11 39 22.41	21.58	2 13 58.0	63.3	8.971	58.04	5 32.09	15 57.08	1 4.01	11 44 54.58
18	11 42 57.74	56.86	1 50 43.4	49.1	8.973	58.16	5 53.30	15 57.34	1 4.01	11 48 51.14
19	11 46 33.12	32.18	1 27 26.4	32.4	8.975	58.26	6 14.47	15 57.60	1 4.02	11 52 47.69
20	11 50 8.55	7.56	+ 1 4 7.2	13.5	8.978	- 58.34	- 6 35.59	15 57.86	1 4.03	11 56 44.24
21	11 53 44.06	43.02	0 40 46.2	52.9	8.982	58.41	6 56.63	15 58.12	1 4.04	12 0 40.80
22	11 57 19.67	18.57	+ 0 17 23.8	30.8	8.986	58.46	7 17.58	15 58.38	1 4.05	12 4 37.35
23	12 0 55.40	54.24	- 0 5 59.8	52.4	8.991	58.49	7 38.41	15 58.65	1 4.07	12 8 33.90
24	12 4 31.26	30.05	0 29 24.3	16.6	8.997	58.51	7 59.10	15 58.92	1 4.09	12 12 30.46
25	12 8 7.27	6.02	- 0 52 49.3	41.0	9.004	- 58.51	- 8 19.64	15 59.19	1 4.12	12 16 27.01
26	12 11 43.45	42.15	1 16 14.2	5.5	9.012	58.51	8 40.01	15 59.46	1 4.15	12 20 23.56
27	12 15 19.81	18.46	1 39 38.6	29.8	9.019	58.50	9 0.21	15 59.74	1 4.18	12 24 20.11
28	12 18 56.37	54.97	2 2 62.3	53.3	9.028	58.47	9 20.20	16 0.01	1 4.21	12 28 16.67
29	12 22 33.14	31.68	2 26 25.0	15.7	9.037	58.41	9 39.96	16 0.29	1 4.24	12 32 13.22
30	12 26 10.15	8.64	- 2 49 46.4	36.7	9.048	- 58.35	- 9 59.49	16 0.57	1 4.28	12 36 9.77
Oct. 1	12 29 47.42	45.86	- 3 12 65.8	55.9	9.059	- 58.26	- 10 18.76	16 0.86	1 4.32	12 40 6.32

NOTE: For mean time interval of semidiameter passing meridian, subtract 0.18 from the sidereal interval.

[Eph 08]

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ' "	"	s	"	m s	' "	m s	h m s
Oct. 1	12 29 47.42	45.86	3 12 65.8	55.9	9.099	-58.26	10 18.76	16 0.86	1 4.32	12 40 6.32
2	12 33 24.97	23.36	3 36 23.1	12.9	9.071	58.17	10 37.77	16 1.14	1 4.36	12 44 2.88
3	12 37 2.81	1.15	3 59 37.8	27.3	9.084	58.06	10 56.49	16 1.42	1 4.41	12 47 59.43
4	12 40 40.95	39.24	4 22 49.6	38.8	9.097	57.93	11 14.91	16 1.71	1 4.46	12 51 55.98
5	12 44 19.44	17.68	4 45 58.1	47.1	9.111	57.79	11 32.98	16 1.99	1 4.51	12 55 52.54
6	12 47 58.28	56.47	5 8 62.9	51.7	9.126	-57.63	11 50.69	16 2.28	1 4.57	12 59 49.09
7	12 51 37.49	35.63	5 31 63.8	52.4	9.143	57.46	12 8.03	16 2.56	1 4.63	13 3 45.64
8	12 55 17.10	15.20	5 54 60.3	48.6	9.160	57.27	12 24.97	16 2.84	1 4.69	13 7 42.20
9	12 58 57.14	55.20	6 17 52.3	40.4	9.178	57.06	12 41.48	16 3.12	1 4.76	13 11 38.75
10	13 2 37.63	35.65	6 40 39.1	27.0	9.197	56.84	12 57.54	16 3.40	1 4.84	13 15 35.30
11	13 6 18.60	16.58	7 3 20.6	8.3	9.217	-56.61	13 13.12	16 3.67	1 4.91	13 19 31.85
12	13 9 60.06	58.00	7 25 56.5	44.0	9.239	56.37	13 28.21	16 3.94	1 4.97	13 23 28.41
13	13 13 42.03	39.93	7 48 26.2	13.6	9.261	56.11	13 42.78	16 4.21	1 5.05	13 27 24.96
14	13 17 24.55	22.40	8 10 49.5	36.7	9.283	55.84	13 56.82	16 4.48	1 5.13	13 31 21.51
15	13 21 7.63	5.43	8 32 66.0	53.1	9.306	55.56	14 10.31	16 4.75	1 5.21	13 35 18.07
16	13 24 51.28	49.03	8 55 15.5	2.4	9.331	-55.26	14 23.21	16 5.02	1 5.29	13 39 14.62
17	13 28 35.53	33.23	9 17 17.3	4.1	9.356	54.93	14 35.52	16 5.29	1 5.38	13 43 11.17
18	13 32 20.40	18.06	9 38 71.2	57.9	9.382	54.59	14 47.23	16 5.56	1 5.47	13 47 7.73
19	13 36 5.89	3.53	10 0 56.8	43.4	9.409	54.23	14 58.28	16 5.82	1 5.56	13 51 4.28
20	13 39 52.02	49.64	10 22 33.8	20.3	9.436	53.85	15 8.71	16 6.09	1 5.65	13 55 0.84
21	13 43 38.81	36.40	10 43 61.7	48.1	9.464	-53.46	15 18.47	16 6.35	1 5.74	13 58 57.39
22	13 47 26.27	23.83	11 5 20.1	6.5	9.492	53.06	15 27.57	16 6.62	1 5.83	14 2 53.94
23	13 51 14.41	11.94	11 26 28.5	14.8	9.521	52.64	15 35.98	16 6.88	1 5.93	14 6 50.50
24	13 55 3.26	0.76	11 47 26.7	13.0	9.550	52.20	15 43.70	16 7.15	1 6.04	14 10 47.05
25	13 58 52.82	50.29	12 8 14.0	0.4	9.579	51.74	15 50.70	16 7.41	1 6.15	14 14 43.60
26	14 2 43.10	40.55	12 28 50.2	36.6	9.609	-51.26	15 56.99	16 7.67	1 6.25	14 18 40.16
27	14 6 34.09	31.52	12 49 14.8	1.2	9.640	50.76	16 2.56	16 7.93	1 6.36	14 22 36.71
28	14 10 25.83	23.24	13 9 27.4	13.8	9.671	50.25	16 7.39	16 8.20	1 6.46	14 26 33.27
29	14 14 18.32	15.71	13 29 27.7	14.2	9.703	49.72	16 11.46	16 8.46	1 6.57	14 30 29.82
30	14 18 11.56	8.93	13 49 15.1	1.7	9.734	49.18	16 14.79	16 8.72	1 6.68	14 34 26.37
31	14 22 5.55	2.90	14 8 49.2	35.9	9.766	-48.63	16 17.35	16 8.98	1 6.79	14 38 22.93
Nov. 1	14 25 60.31	57.64	14 27 69.5	56.3	9.798	48.05	16 19.15	16 9.23	1 6.91	14 42 19.49
2	14 29 55.86	53.19	14 47 15.8	2.8	9.830	47.46	16 20.16	16 9.48	1 7.02	14 46 16.04
3	14 33 52.21	49.53	15 6 7.4	54.6	9.863	46.84	16 20.39	16 9.73	1 7.14	14 50 12.60
4	14 37 49.34	46.65	15 24 44.2	31.5	9.897	46.20	16 19.82	16 9.98	1 7.25	14 54 9.15
5	14 41 47.28	44.58	15 42 65.6	53.1	9.931	-45.55	16 18.45	16 10.23	1 7.38	14 58 5.71
6	14 45 46.04	43.34	16 0 71.3	59.0	9.965	44.90	16 16.25	16 10.47	1 7.50	15 2 2.26
7	14 49 45.63	42.92	16 18 60.9	48.8	10.000	44.22	16 13.23	16 10.71	1 7.62	15 5 58.82
8	14 53 46.07	43.36	16 36 34.1	22.3	10.035	43.53	16 9.36	16 10.95	1 7.74	15 9 55.37
9	14 57 47.34	44.64	16 53 50.5	38.9	10.071	42.82	16 4.65	16 11.18	1 7.86	15 13 51.93
10	15 1 49.46	46.77	17 10 49.6	38.2	10.107	-42.09	15 59.09	16 11.40	1 7.98	15 17 48.48
11	15 5 52.44	49.76	17 27 31.1	20.0	10.143	41.35	15 52.67	16 11.62	1 8.10	15 21 45.04
12	15 9 56.29	53.62	17 43 54.6	43.8	10.180	40.60	15 45.40	16 11.83	1 8.22	15 25 41.60
13	15 13 60.98	58.32	17 59 59.7	49.2	10.215	39.83	15 37.25	16 12.04	1 8.33	15 29 38.15
14	15 18 6.56	3.91	18 15 46.2	36.0	10.251	39.04	15 28.25	16 12.25	1 8.45	15 33 34.71
15	15 22 13.00	10.37	18 31 13.5	3.6	10.287	-38.23	15 18.36	16 12.46	1 8.57	15 37 31.26
16	15 26 20.31	17.72	18 46 21.2	11.6	10.321	-37.41	15 7.63	16 12.67	1 8.69	15 41 27.82

NOTE. -For mean time interval of semidiameter passing meridian, subtract 0.18 from the sidereal interval

[Eph 68]

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.			Apparent Declination.			Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Meridian.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.		Mean Noon.	App. Noon.		Right Ascen.	Declination.				
	h m s	s		° ' "	"		s	"	m s	"	m s	h m s
Nov 16	15 26 20.31	17.72		18 46 21.2	11.6		10.321	-37.41	-15 7.63	16 12.67	1 8.69	15 41 27.82
17	15 30 28.46	25.90		19 06 09.0	59.8		10.357	36.57	14 56.04	16 12.87	1 8.80	15 45 24.38
18	15 34 37.45	34.93		19 15 36.4	27.5		10.392	35.71	14 43.61	16 13.07	1 8.92	15 49 20.93
19	15 38 47.30	44.80		19 29 43.0	34.4		10.427	34.84	14 30.32	16 13.27	1 9.03	15 53 17.49
20	15 42 58.00	55.51		19 43 28.7	20.4		10.462	33.96	14 16.20	16 13.46	1 9.14	15 57 14.05
21	15 47 9.50	7.04		19 56 53.0	45.0		10.496	-33.06	-14 1.26	16 13.65	1 9.25	16 1 10.60
22	15 51 21.80	19.38		20 9 55.4	47.7		10.529	32.13	13 45.51	16 13.83	1 9.36	16 5 7.16
23	15 55 34.92	32.55		20 22 35.6	28.3		10.563	31.19	13 28.96	16 14.02	1 9.47	16 9 3.72
24	15 59 48.81	46.48		20 34 53.3	46.3		10.595	30.25	13 11.63	16 14.20	1 9.57	16 13 0.28
25	16 4 3.48	1.20		20 46 48.0	41.4		10.627	29.29	12 53.53	16 14.38	1 9.68	16 16 56.83
26	16 8 18.89	16.65		20 58 19.3	13.2		10.657	-28.31	-12 34.69	16 14.56	1 9.79	16 20 53.39
27	16 12 35.01	32.82		21 9 27.1	21.3		10.686	27.32	12 15.13	16 14.74	1 9.89	16 24 49.95
28	16 16 51.84	49.70		21 20 10.7	5.3		10.715	26.31	11 54.86	16 14.92	1 9.99	16 28 46.50
29	16 21 9.36	7.28		21 30 30.2	25.1		10.744	25.29	11 33.90	16 15.09	1 10.08	16 32 43.06
30	16 25 27.52	25.51		21 40 25.1	20.4		10.771	24.27	11 12.28	16 15.25	1 10.17	16 36 39.62
Dec. 1	16 29 46.33	44.39		21 49 55.1	50.7		10.797	-23.23	-10 50.02	16 15.41	1 10.26	16 40 36.18
2	16 34 5.77	3.89		21 58 59.7	55.6		10.822	22.17	10 27.15	16 15.56	1 10.35	16 44 32.74
3	16 38 25.79	23.98		22 7 39.0	35.2		10.847	21.10	10 3.67	16 15.71	1 10.43	16 48 29.29
4	16 42 46.39	44.65		22 15 52.5	49.0		10.871	20.03	9 39.62	16 15.86	1 10.51	16 52 25.85
5	16 47 7.57	5.90		22 23 40.2	37.0		10.894	18.95	9 15.00	16 16.00	1 10.59	16 56 22.41
6	16 51 29.29	27.69		22 30 61.6	58.7		10.917	-17.85	-8 49.84	16 16.14	1 10.66	17 0 18.97
7	16 55 51.51	49.99		22 37 56.7	54.1		10.938	16.75	8 24.16	16 16.27	1 10.72	17 4 15.52
8	17 0 14.22	12.78		22 44 25.1	22.8		10.958	15.64	7 58.01	16 16.39	1 10.78	17 8 12.08
9	17 4 37.41	36.05		22 50 26.8	24.8		10.977	14.52	7 31.38	16 16.50	1 10.85	17 12 8.64
10	17 8 61.04	59.74		22 55 61.4	59.7		10.994	13.39	7 4.32	16 16.61	1 10.91	17 16 5.20
11	17 13 25.09	23.87		23 1 9.0	7.6		11.011	-12.26	-6 36.82	16 16.72	1 10.96	17 20 1.76
12	17 17 49.53	48.40		23 5 49.3	48.1		11.027	11.12	6 8.93	16 16.82	1 11.01	17 23 58.32
13	17 22 14.34	13.28		23 10 2.0	1.0		11.043	9.97	5 40.67	16 16.92	1 11.06	17 27 54.88
14	17 26 39.48	38.50		23 13 47.2	46.4		11.057	8.82	5 12.07	16 17.01	1 11.10	17 31 51.43
15	17 31 4.91	4.02		23 17 4.6	4.0		11.068	7.66	4 43.19	16 17.10	1 11.14	17 35 47.99
16	17 35 30.61	29.81		23 19 54.1	53.6		11.079	-6.50	-4 14.04	16 17.18	1 11.17	17 39 44.55
17	17 39 56.55	55.85		23 22 15.7	15.3		11.088	5.33	3 44.63	16 17.26	1 11.19	17 43 41.10
18	17 44 22.70	22.10		23 24 9.1	8.8		11.094	4.16	3 15.04	16 17.33	1 11.21	17 47 37.66
19	17 48 49.02	48.51		23 25 34.5	34.3		11.100	2.98	2 45.27	16 17.39	1 11.23	17 51 34.22
20	17 53 15.47	15.05		23 26 31.7	31.6		11.105	1.81	2 15.38	16 17.45	1 11.24	17 55 30.78
21	17 57 42.01	41.68		23 27 0.6	0.6		11.107	-0.63	-1 45.38	16 17.51	1 11.25	17 59 27.34
22	18 2 8.61	8.37		23 27 1.2	1.2		11.108	+0.55	1 15.33	16 17.56	1 11.26	18 3 23.90
23	18 6 35.23	35.09		23 26 33.6	33.6		11.109	1.73	0 45.25	16 17.61	1 11.26	18 7 20.46
24	18 11 1.84	1.79		23 25 37.6	37.6		11.108	2.91	-0 15.20	16 17.66	1 11.25	18 11 17.01
25	18 15 28.39	28.43		23 24 13.3	13.3		11.105	4.09	+0 14.78	16 17.71	1 11.24	18 15 13.57
26	18 19 54.84	54.96		23 22 20.8	20.8		11.099	+5.27	+0 44.68	16 17.75	1 11.23	18 19 10.13
27	18 24 21.13	21.36		23 19 60.0	59.0		11.093	6.44	1 14.44	16 17.79	1 11.21	18 23 6.69
28	18 28 47.26	47.58		23 17 11.1	10.9		11.085	7.61	1 44.02	16 17.82	1 11.19	18 27 3.25
29	18 33 13.17	13.58		23 13 54.2	53.9		11.075	8.78	2 3.40	16 17.84	1 11.16	18 30 59.80
30	18 37 38.83	39.33		23 10 9.3	8.9		11.064	9.94	2 42.52	16 17.86	1 11.13	18 34 56.36
31	18 42 4.21	4.79		23 5 56.6	56.1		11.051	+11.11	+3 11.37	16 17.88	1 11.09	18 38 52.92
32	18 46 20.28	20.95		23 1 16.1	15.5		11.038	+12.26	+3 39.90	16 17.89	1 11.05	18 42 49.48

NOTE. -For mean time interval of semidiameter passing meridian, subtract 0.19 from the sidereal interval.

[Eph 08]

AT TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.										
Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Center.	Diff. for 1 Hour of Long.	Geocentric Declination of Center.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	"	"	
Jan. 1	22 48.34	2.597	17 31 55.62	166.10	- 21 24 14.7	- 315.4	74.53	16 34.9	60 45.6	II. S.
2	23 52.05	2.695	18 39 44.94	171.99	22 39 42.3	- 55.7	75.88	16 42.4	61 12.9	
4	0 56.79	2.681	19 48 36.65	171.13	22 6 48.6	+ 218.8	75.68	16 44.0	61 19.0	
5	1 59.88	2.563	20 55 48.99	164.06	19 48 46.9	462.9	74.08	16 39.9	61 3.7	I. S.
6	2 59.38	2.391	21 59 25.30	153.70	16 4 49.7	645.1	71.67	16 30.6	60 29.8	I. S.
7	3 54.63	2.216	22 58 45.65	143.18	- 11 22 4.6	+ 757.2	69.14	16 17.9	59 43.1	I. S.
8	4 46.00	2.072	23 54 13.34	134.53	6 7 26.1	806.6	67.00	16 3.3	58 49.4	I. S.
9	5 34.46	1.973	0 46 45.08	128.57	- 0 43 24.2	806.3	65.48	15 48.2	57 54.2	I. S.
10	6 21.09	1.920	1 37 27.49	125.40	+ 4 32 30.8	767.6	64.64	15 34.0	57 2.0	I. S.
11	7 6.96	1.908	2 27 23.79	124.67	9 26 38.8	698.3	64.42	15 21.3	56 15.4	I. S.
12	7 52.95	1.928	3 17 26.79	125.85	+ 13 47 43.4	+ 602.9	64.69	15 10.5	55 35.6	I. S.
13	8 39.66	1.967	4 8 14.07	128.22	17 25 48.3	483.8	65.25	15 1.6	55 3.2	I. S.
14	9 27.42	2.012	5 0 3.60	130.88	20 11 58.0	343.8	65.87	14 54.7	54 37.8	I. S.
15	10 16.13	2.045	5 52 50.80	132.86	21 58 43.1	187.7	66.32	14 49.6	54 19.1	I. N. S.
16	11 5.36	2.053	6 46 9.35	133.39	22 40 59.9	+ 23.0	66.40	14 46.1	54 6.3	I. N. S.
17	11 54.44	2.031	7 39 18.71	132.09	+ 22 17 13.1	- 140.9	66.04	14 44.2	53 59.2	I. N. S.
18	12 42.66	1.983	8 31 36.72	129.18	20 49 43.3	294.1	65.29	14 43.7	53 57.3	II. N. S.
19	13 29.52	1.920	9 22 32.48	125.37	18 24 23.8	429.0	64.32	14 44.7	54 0.9	II. S.
20	14 14.82	1.856	10 11 54.59	121.54	15 9 30.1	541.4	63.35	14 47.2	54 10.4	II. S.
21	14 58.73	1.806	10 59 52.73	118.52	11 14 28.0	629.7	62.60	14 51.6	54 26.5	II. S.
22	15 41.71	1.781	11 46 55.01	116.98	+ 6 48 56.3	- 693.9	62.25	14 58.0	54 49.9	II. S.
23	16 24.46	1.789	12 33 43.93	117.46	+ 2 2 31.9	734.0	62.45	15 6.5	55 21.2	II. S.
24	17 7.88	1.837	13 21 12.87	120.38	- 2 54 51.9	748.4	63.28	15 17.4	56 0.9	II. S.
25	17 52.99	1.930	14 10 23.19	125.96	7 52 11.8	732.7	64.80	15 30.3	56 48.3	II. S.
26	18 40.87	2.068	15 2 20.27	134.25	12 35 58.0	679.0	66.96	15 45.0	57 42.4	II. S.
27	19 32.53	2.243	15 58 5.19	144.80	- 16 48 54.3	- 576.6	69.60	16 0.8	58 40.1	II. S.
28	20 28.64	2.433	16 58 17.81	156.22	20 9 24.6	415.6	72.34	16 16.3	59 37.3	II. S.
29	21 20.08	2.595	18 2 50.61	165.97	22 13 16.6	- 194.5	74.59	16 30.1	60 27.9	II. N. S.
30	22 32.56	2.678	19 10 26.32	170.99	22 39 15.0	+ 69.1	75.70	16 40.3	61 5.4	II. N.
31	23 36.77	2.654	20 18 46.10	169.56	21 17 16.3	337.8	75.33	16 45.4	61 24.2	
Feb. 2	0 39.24	2.539	21 25 20.86	162.62	- 18 14 6.6	+ 568.5	73.70	16 44.6	61 21.1	
3	1 38.30	2.379	22 28 30.53	153.00	13 51 29.4	732.2	71.43	16 37.8	60 56.1	I. S.
4	2 33.47	2.222	23 27 46.47	143.54	8 38 19.5	821.6	69.15	16 26.2	60 13.4	I. S.
5	3 25.20	2.096	0 23 35.36	135.94	- 3 2 58.5	845.2	67.29	16 11.3	59 18.8	I. S.
6	4 14.39	2.011	1 16 51.62	130.85	+ 2 30 55.7	816.7	66.04	15 55.0	58 18.9	I. S.
7	5 2.07	1.968	2 8 36.46	128.27	+ 7 45 15.0	+ 749.2	65.41	15 38.7	57 19.4	I. S.
8	5 49.15	1.961	2 59 45.86	127.81	12 26 22.0	652.0	65.31	15 23.9	56 24.8	I. S.
9	6 36.38	1.978	3 51 3.60	128.86	16 23 46.3	531.4	65.58	15 11.1	55 37.8	I. S.
10	7 24.19	2.007	4 42 56.84	130.63	19 29 0.5	391.9	66.01	15 0.8	55 0.0	I. S.
11	8 12.71	2.035	5 35 32.88	132.28	21 35 19.1	237.6	66.38	14 53.0	54 31.6	I. S.
12	9 1.74	2.047	6 28 38.77	133.00	+ 22 37 54.8	+ 74.4	66.50	14 47.8	54 12.5	I. N. S.
13	9 50.77	2.035	7 21 45.52	132.30	22 34 39.0	- 90.3	66.24	14 44.9	54 1.7	I. N.
14	10 39.22	1.999	8 14 17.16	130.12	21 26 37.1	248.0	65.60	14 44.0	53 58.5	I. N.
15	11 26.57	1.945	9 5 42.28	126.86	19 18 12.8	391.0	64.71	14 44.9	54 1.7	I. N.
16	12 12.52	1.845	9 55 43.28	123.23	+ 16 16 36.0	- 513.3	63.73	14 47.3	54 10.5	I. II. N.

AT TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Center.	Diff. for 1 Hour of Long.	Geocentric Declination of Center.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	"	"	s	"	"	
Feb. 16	12 12.52	1.885	9 55 43.28	123.23	+ 16 16 36.0	- 513.3	63.73	14 47.3	54 10.5	I. II. N.
17	12 57.08	1.831	10 44 20.54	119.99	12 30 49.2	611.4	62.87	14 51.0	54 24.2	II. N. S.
18	13 40.54	1.795	11 31 51.93	117.85	8 10 55.9	683.7	62.33	14 56.0	54 42.7	II. S.
19	14 23.44	1.785	12 18 49.79	117.28	+ 3 27 26.3	789.3	62.23	15 2.4	55 5.9	II. S.
20	15 6.51	1.809	13 5 57.51	118.72	- 1 28 49.3	747.2	62.69	15 10.0	55 34.1	II. S.
21	15 50.60	1.871	13 54 6.63	122.44	- 6 26 23.4	- 735.3	63.77	15 19.2	56 7.6	II. S.
22	16 36.64	1.972	14 44 13.51	128.54	11 12 31.7	689.2	65.44	15 29.7	56 46.3	II. S.
23	17 25.58	2.110	15 37 14.04	136.83	15 32 21.3	602.5	67.63	15 41.6	57 29.8	II. S.
24	18 18.15	2.272	16 33 53.42	146.58	19 8 12.9	468.2	70.10	15 54.4	58 17.0	II. S.
25	19 14.64	2.432	17 34 29.00	156.18	21 40 3.7	282.4	72.42	16 7.6	59 5.1	II. S.
26	20 14.56	2.551	18 38 30.63	163.33	- 22 48 1.6	- 51.0	74.08	16 19.8	59 50.2	II. N.
27	21 16.48	2.594	19 44 32.45	165.93	22 17 34.1	+ 204.8	74.62	16 30.0	60 27.6	II. N.
28	22 18.39	2.552	20 50 33.78	163.37	20 5 23.1	451.4	73.95	16 36.6	60 51.6	II. N.
29	23 18.45	2.446	21 54 43.94	157.02	16 22 11.2	655.0	72.40	16 38.4	60 58.3	
Mar. 2	0 15.62	2.317	22 55 59.71	149.24	11 30 5.4	794.2	70.49	16 34.9	60 45.5	
3	1 9.74	2.197	23 54 12.62	142.06	- 5 56 39.6	+ 861.9	68.73	16 26.5	60 14.5	
4	2 1.33	2.107	0 49 52.70	136.62	- 0 9 15.1	865.2	67.40	16 14.1	59 29.0	I. S.
5	2 51.16	2.052	1 43 47.74	133.31	+ 5 28 26.2	815.3	66.61	15 59.1	58 34.1	I. S.
6	3 40.08	2.029	2 36 47.36	131.96	10 37 32.8	784.2	66.33	15 43.3	57 36.1	I. S.
7	4 28.77	2.031	3 29 33.17	132.06	15 3 46.5	602.5	66.41	15 28.0	56 39.8	I. S.
8	5 17.68	2.046	4 22 32.65	132.96	+ 18 36 35.5	+ 458.5	66.69	15 14.3	55 49.7	I. S.
9	6 6.99	2.062	5 15 55.63	133.89	21 8 32.7	299.3	66.94	15 3.0	55 8.2	I. S.
10	6 56.55	2.066	6 9 33.78	134.13	22 34 57.7	+ 132.0	66.99	14 54.5	54 36.9	I. N. S.
11	7 45.98	2.050	7 3 4.22	133.19	22 53 58.7	- 36.4	66.71	14 48.8	54 16.3	I. N.
12	8 34.78	2.014	7 55 57.31	131.03	22 6 38.7	198.6	66.08	14 46.1	54 6.1	I. N.
13	9 22.53	1.963	8 47 46.29	127.93	+ 20 16 48.3	- 348.0	65.20	14 45.9	54 5.4	I. N.
14	10 8.95	1.906	9 38 15.53	124.50	17 30 41.8	479.2	64.22	14 47.9	54 12.9	I. N.
15	10 54.03	1.853	10 27 24.61	121.37	13 56 21.6	588.5	63.33	14 51.8	54 27.3	I. N.
16	11 38.03	1.816	11 15 28.50	119.16	9 43 7.1	673.3	62.70	14 57.2	54 47.1	I. N.
17	12 21.42	1.803	12 2 55.26	118.34	5 1 16.1	731.2	62.47	15 3.7	55 10.9	II. N.
18	13 4.82	1.819	12 50 23.02	119.29	+ 0 2 0.0	- 760.0	62.75	15 11.0	55 37.7	II. N. S.
19	13 48.99	1.868	13 38 37.00	122.23	- 5 2 26.3	756.6	63.59	15 18.9	56 6.5	II. S.
20	14 34.74	1.951	14 28 26.31	127.23	9 58 27.4	717.2	64.98	15 27.2	56 36.9	II. S.
21	15 22.88	2.066	15 20 39.21	134.13	14 30 46.4	637.2	66.85	15 35.9	57 8.8	II. S.
22	16 14.06	2.202	16 15 54.92	142.31	18 22 17.4	512.5	69.00	15 44.9	57 41.8	II. S.
23	17 8.57	2.339	17 14 30.89	150.56	- 21 14 36.8	- 341.5	71.09	15 54.0	58 15.3	II. S.
24	18 6.09	2.448	18 16 8.22	157.11	22 49 57.6	- 129.3	72.70	16 3.0	58 48.4	II. N. S.
25	19 5.59	2.500	19 19 44.56	160.24	22 54 34.5	+ 108.6	73.44	16 11.4	59 19.3	II. N.
26	20 5.52	2.481	20 23 46.41	159.22	21 22 52.9	347.7	73.15	16 18.5	59 45.1	II. N.
27	21 4.31	2.409	21 26 40.25	154.81	18 19 57.2	560.6	72.03	16 23.3	60 2.8	II. N.
28	22 0.95	2.308	22 27 24.20	148.73	- 14 0 50.6	+ 725.8	70.48	16 25.0	60 9.2	II. N.
29	22 55.12	2.209	23 25 40.28	142.76	8 47 20.0	831.4	68.95	16 23.1	60 2.1	II. N.
30	23 47.15	2.132	0 21 47.04	138.10	- 3 4 2.6	874.7	67.75	16 17.3	59 40.7	
Apr. 1	0 37.08	2.085	1 16 23.57	135.28	+ 2 44 40.2	859.5	67.03	16 8.0	59 6.6	
2	1 27.45	2.068	2 10 14.51	134.25	+ 8 16 44.4	+ 793.0	66.81	15 56.0	58 22.7	I. S.

AT TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Center.	Diff. for 1 Hour of Long.	Geocentric Declination of Center.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi- diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	' "	' "	
Apr. 2	1 27.45	2.068	2 10 14.51	134.25	+ 8 16 44.4	+ 793.0	66.81	15 56.0	58 22.7	I. S.
3	2 17.11	2.074	3 3 58.89	134.63	13 13 28.6	684.4	66.96	15 42.5	57 33.2	I. S.
4	3 7.09	2.092	3 58 2.43	135.72	17 20 2.1	543.7	67.31	15 28.8	56 42.8	I. S.
5	3 57.51	2.108	4 52 32.60	136.70	20 25 34.4	381.0	67.63	15 15.9	55 55.6	I. S.
6	4 48.18	2.110	5 47 17.55	136.83	22 23 18.2	206.4	67.72	15 4.9	55 15.1	I. N. S.
7	5 38.64	2.091	6 41 50.21	135.65	+ 23 10 27.2	+ 29.7	67.45	14 56.3	54 43.6	I. N.
8	6 28.35	2.048	7 35 37.11	133.06	22 48 0.4	- 140.3	66.79	14 50.6	54 22.8	I. N.
9	7 16.81	1.989	8 28 9.26	129.51	21 20 3.4	296.8	65.84	14 47.9	54 12.9	I. N.
10	8 3.76	1.924	9 19 10.79	125.63	18 52 56.6	435.5	64.76	14 48.2	54 13.9	I. N.
11	8 49.22	1.866	10 8 42.56	122.15	15 34 23.2	553.8	63.77	14 51.2	54 24.9	I. N.
12	9 33.48	1.825	10 57 1.58	119.66	+ 11 32 56.0	- 649.8	63.03	14 56.5	54 44.5	I. N.
13	10 17.02	1.808	11 44 37.94	118.65	6 57 50.1	721.6	62.70	15 3.8	55 11.0	I. N.
14	11 0.52	1.822	12 32 11.34	119.46	+ 1 59 17.7	766.3	62.87	15 12.3	55 42.2	I. N.
15	11 44.73	1.869	13 20 28.09	122.30	- 3 11 2.1	779.6	63.62	15 21.4	56 15.9	I. N.
16	12 30.49	1.950	14 10 17.85	127.80	8 19 30.2	755.9	64.93	15 30.8	56 50.1	II. N. S.
17	13 18.60	2.063	15 2 28.82	134.00	- 13 10 3.2	- 688.9	66.73	15 39.6	57 22.7	II. N. S.
18	14 9.70	2.197	15 57 39.55	142.02	17 24 15.2	573.5	68.83	15 47.8	57 52.5	II. S.
19	15 4.05	2.330	16 56 6.17	150.04	20 42 15.0	408.3	70.89	15 54.8	58 18.4	II. S.
20	16 1.31	2.434	17 57 27.89	156.30	22 45 5.7	- 199.7	72.47	16 0.8	58 40.3	II. N. S.
21	17 0.42	2.480	19 0 40.60	159.07	23 18 25.7	+ 35.6	73.19	16 5.6	58 57.9	II. N.
22	17 59.80	2.457	20 4 9.84	157.69	- 22 16 20.1	+ 273.0	72.88	16 9.2	59 11.2	II. N.
23	18 57.91	2.378	21 6 22.65	152.94	19 43 8.8	487.2	71.73	16 11.6	59 19.8	II. N.
24	19 53.75	2.273	22 6 18.66	146.62	15 52 7.6	699.8	70.14	16 12.4	59 22.7	II. N.
25	20 47.06	2.172	23 3 42.26	140.51	11 2 7.7	781.1	68.55	16 11.3	59 19.0	II. N.
26	21 38.18	2.094	23 58 54.69	135.84	- 5 34 22.6	848.5	67.30	16 8.2	59 7.6	II. N.
27	22 27.84	2.050	0 52 38.73	133.18	+ 0 9 36.1	+ 862.7	66.57	16 2.9	58 47.9	II. N.
28	23 16.85	2.040	1 45 43.91	132.57	5 49 4.1	826.6	66.38	15 55.3	58 20.2	
30	0 5.96	2.057	2 38 55.64	133.63	11 4 42.6	744.4	66.64	15 45.9	57 45.6	
May 1	0 55.73	2.091	3 32 46.30	135.68	15 39 14.6	622.2	67.19	15 35.2	57 6.5	
2	1 46.35	2.126	4 27 28.59	137.78	19 18 15.1	468.3	67.77	15 24.0	56 25.4	I. S.
3	2 37.66	2.145	5 22 51.64	138.92	+ 21 51 6.7	+ 293.5	68.13	15 13.2	55 45.8	I. N. S.
4	3 29.10	2.136	6 18 23.18	138.39	23 11 53.1	+ 110.0	68.07	15 3.7	55 10.8	I. N. S.
5	4 19.95	2.096	7 13 19.10	135.97	23 19 36.6	- 69.9	67.51	14 56.0	54 42.7	I. N.
6	5 9.51	2.031	8 6 57.69	132.06	22 17 47.2	236.4	66.55	14 50.9	54 23.8	I. N.
7	5 57.35	1.955	8 58 52.26	127.46	20 13 4.7	383.6	65.36	14 48.6	54 15.2	I. N.
8	6 43.36	1.882	9 48 57.31	123.08	+ 17 13 47.5	- 509.1	64.19	14 49.3	54 17.8	I. N.
9	7 27.81	1.826	10 37 27.84	119.70	13 28 43.8	612.6	63.25	14 52.9	54 31.3	I. N.
10	8 11.20	1.796	11 24 55.28	117.90	9 6 42.2	693.9	62.71	14 59.3	54 54.8	I. N.
11	8 54.27	1.799	12 12 2.67	118.07	+ 4 16 43.2	751.9	62.70	15 8.1	55 27.0	I. N.
12	9 37.84	1.839	12 59 41.02	120.52	- 0 51 16.8	783.2	63.30	15 18.7	56 5.8	I. N.
13	10 22.86	1.919	13 48 46.09	125.32	- 6 5 27.9	- 781.6	64.54	15 30.2	56 48.2	I. N.
14	11 10.26	2.037	14 40 14.47	132.41	11 11 3.2	738.6	66.37	15 41.9	57 31.1	I. N.
15	12 0.87	2.184	15 34 55.70	141.84	15 49 39.8	645.2	68.62	15 52.8	58 11.0	I. II. N.
16	12 55.16	2.339	16 33 18.58	150.59	19 39 40.9	495.2	70.96	16 2.0	58 44.9	II. N. S.
17	13 52.95	2.469	17 35 12.31	158.42	- 22 18 34.7	- 291.1	72.90	16 8.9	59 10.2	II. N. S.

AT TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Center.	Diff. for 1 Hour of Long.	Geocentric Declination of Center.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° "	"	s	" "	" "	
May 17	13 52.95	2.469	17 35 12.31	158.42	-22 18 34.7	-291.1	72.90	16 8.9	59 10.2	II. N. S.
18	14 53.18	2.536	18 39 32.38	162.46	23 27 30.0	-49.3	73.92	16 13.2	59 25.8	II. N. S.
19	15 54.02	2.520	19 44 29.37	161.44	22 56 48.8	+201.5	73.74	16 14.9	59 31.9	II. N.
20	16 53.53	2.430	20 48 6.05	156.02	20 49 19.9	430.0	72.50	16 14.2	59 29.5	II. N.
21	17 50.34	2.302	21 49 0.64	148.34	17 18 50.9	614.0	70.65	16 11.6	59 20.0	II. N.
22	18 44.02	2.174	22 46 46.65	140.66	-12 45 22.1	+744.3	68.72	16 7.6	59 5.1	II. N.
23	19 34.90	2.072	23 41 44.73	134.54	7 30 29.4	821.3	67.13	16 2.3	58 45.9	II. N.
24	20 23.80	2.009	0 34 43.16	130.75	-1 54 50.0	849.0	66.10	15 56.2	58 23.3	II. N.
25	21 11.68	1.987	1 26 40.33	129.43	+3 42 38.5	831.1	65.69	15 49.1	57 57.5	II. N.
26	21 59.48	2.001	2 18 32.50	130.25	9 4 23.2	770.8	65.86	15 41.4	57 29.1	II. N.
27	22 47.94	2.041	3 11 5.16	132.67	+13 54 0.4	+671.0	66.44	15 33.0	56 58.2	II. N.
28	23 37.54	2.092	4 4 45.37	135.72	17 56 28.1	535.8	67.20	15 24.2	56 25.8	
30	0 28.29	2.134	4 59 35.29	138.27	20 58 55.9	372.4	67.86	15 15.2	55 53.1	
31	1 19.78	2.151	5 55 9.80	139.27	22 52 8.0	191.6	68.15	15 6.8	55 22.0	I. N. S.
June 1	2 11.24	2.131	6 50 42.26	138.05	23 31 43.0	+6.7	67.89	14 59.2	54 54.1	I. N.
2	3 1.76	2.075	7 45 18.69	134.67	+22 58 42.2	-169.3	67.09	14 53.1	54 31.9	I. N.
3	3 50.63	1.995	8 38 15.36	129.89	21 18 45.0	326.8	65.92	14 49.0	54 17.0	I. N.
4	4 37.48	1.910	9 29 10.72	124.75	18 40 25.1	460.8	64.61	14 47.4	54 10.9	I. N.
5	5 22.38	1.835	10 18 8.62	120.26	15 13 20.2	570.6	63.44	14 48.5	54 15.0	I. N.
6	6 5.75	1.784	11 5 34.39	117.19	11 7 0.3	657.3	62.62	14 52.6	54 29.9	I. N.
7	6 48.27	1.766	11 52 9.23	116.08	+6 30 23.9	-722.0	62.30	14 59.5	54 55.4	I. N.
8	7 30.81	1.786	12 38 44.99	117.31	+1 32 22.8	764.0	62.61	15 9.2	55 31.0	I. N.
9	8 14.35	1.850	13 26 21.08	121.15	-3 37 19.5	779.6	63.61	15 21.2	56 15.0	I. N.
10	8 59.95	1.958	14 16 1.35	127.66	8 46 49.3	761.4	65.29	15 34.7	57 4.7	I. N.
11	9 48.67	2.108	15 8 49.15	136.68	13 40 37.5	699.1	67.58	15 48.9	57 56.7	I. N.
12	10 41.37	2.286	16 5 36.07	147.38	-17 58 42.6	-581.1	70.22	16 2.5	58 46.6	I. N.
13	11 38.37	2.460	17 6 42.05	157.87	21 17 9.5	400.7	72.76	16 14.2	59 29.4	I. N. S.
14	12 39.06	2.585	18 11 30.40	165.40	23 11 45.5	-164.6	74.55	16 22.7	60 0.7	II. N. S.
15	13 41.73	2.619	19 18 17.32	167.45	23 24 49.1	+101.2	75.06	16 27.3	60 17.7	II. N. S.
16	14 43.98	2.553	20 24 39.14	163.44	21 52 3.5	357.7	74.18	16 27.7	60 19.2	II. N.
17	15 43.72	2.418	21 28 29.60	155.30	-18 44 29.2	+570.7	72.29	16 24.4	60 6.8	II. N.
18	16 39.86	2.262	22 28 43.98	145.92	14 23 38.9	722.8	70.04	16 17.9	59 43.2	II. N.
19	17 32.43	2.124	23 25 23.05	137.66	9 14 33.8	812.8	67.99	16 9.5	59 12.1	II. N.
20	18 22.14	2.026	0 19 10.84	131.77	-3 40 43.5	848.0	66.47	15 59.8	58 36.8	II. N.
21	19 10.06	1.974	1 11 10.13	128.62	+1 57 40.2	836.8	65.62	15 49.8	58 0.1	II. N.
22	19 57.25	1.965	2 2 25.84	128.08	+7 23 26.0	+785.7	65.44	15 40.0	57 23.9	II. N.
23	20 44.66	1.991	2 53 54.98	129.63	12 21 26.5	698.6	65.79	15 30.5	56 49.1	II. N.
24	21 32.99	2.039	3 46 19.21	132.52	16 37 55.7	578.5	66.48	15 21.6	56 16.3	II. N.
25	22 22.56	2.091	4 39 57.93	135.66	20 0 26.4	429.5	67.24	15 13.2	55 45.8	II. N.
26	23 13.23	2.128	5 34 43.04	137.86	22 18 40.6	258.7	67.76	15 5.6	55 17.9	
28	0 4.42	2.132	6 29 59.26	138.12	+23 25 53.9	+76.6	67.82	14 58.8	54 53.0	
29	0 55.24	2.097	7 24 53.65	136.03	23 20 14.0	-103.6	67.30	14 53.1	54 32.0	
30	1 44.81	2.029	8 18 32.53	131.94	22 4 58.4	269.6	66.28	14 48.7	54 15.8	I. N.
July 1	2 32.50	1.943	9 10 18.12	126.77	19 47 34.5	413.2	64.98	14 46.0	54 5.7	I. N.
2	3 18.09	1.857	9 59 57.77	121.65	+16 37 48.3	-531.2	63.67	14 45.2	54 3.0	I. N.

AT TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Center.	Diff. for 1 Hour of Long.	Geocentric Declination of Center.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	"	"	
July 2	3 18.09	1.857	9 59 57.77	121.65	+ 16 37 48.3	- 531.2	63.67	14 45.2	54 3.0	I. N.
3	4 1.80	1.787	10 47 43.83	117.44	12 46 2.1	623.5	62.60	14 46.8	54 8.8	I. N.
4	4 44.15	1.746	11 34 8.49	114.93	8 22 9.1	692.1	61.96	14 51.0	54 24.4	I. N.
5	5 25.92	1.740	12 19 57.99	114.59	+ 3 35 22.0	738.2	61.89	14 58.0	54 49.8	I. N.
6	6 8.03	1.776	13 6 8.35	116.73	- 1 25 19.0	761.2	62.50	15 7.7	55 25.4	I. N.
7	6 51.54	1.857	13 53 42.84	121.63	- 6 30 1.9	- 757.4	63.82	15 20.0	56 10.7	I. N.
8	7 37.58	1.986	14 43 49.03	129.37	11 26 39.7	719.0	65.84	15 34.4	57 3.6	I. N.
9	8 27.23	2.157	15 37 32.73	139.64	15 59 17.0	635.2	68.45	15 50.1	58 1.1	I. N.
10	9 21.33	2.350	16 35 44.06	151.38	19 47 12.2	493.8	71.31	16 5.9	58 59.0	I. N.
11	10 20.04	2.534	17 38 32.96	162.29	22 25 52.6	289.2	73.88	16 20.2	59 51.5	I. N.
12	11 22.41	2.649	18 45 2.24	169.22	- 23 31 27.6	- 32.1	75.47	16 31.4	60 32.7	I. N.
13	12 26.32	2.658	19 53 3.98	169.80	22 48 53.8	+ 244.6	75.60	16 38.2	60 57.5	II. N.
14	13 29.17	2.564	21 0 1.51	164.14	20 19 6.1	496.7	74.30	16 39.6	61 2.8	II. N.
15	14 28.95	2.411	22 3 54.59	154.95	16 19 17.1	690.6	72.15	16 35.9	60 48.9	II. N.
16	15 24.88	2.251	23 3 56.16	145.31	11 16 16.6	812.4	69.85	16 27.6	60 18.7	II. N.
17	16 17.25	2.119	0 0 23.88	137.38	- 5 38 26.7	+ 866.2	67.90	16 16.3	59 37.0	II. N.
18	17 6.98	2.031	0 54 11.99	132.10	+ 0 9 13.0	863.6	66.57	16 3.2	58 49.1	II. N.
19	17 55.15	1.989	1 46 26.71	129.58	5 46 25.5	815.7	65.92	15 49.6	57 59.5	II. N.
20	18 42.82	1.987	2 38 11.20	129.49	10 56 56.3	731.2	65.89	15 36.7	57 11.8	II. N.
21	19 30.83	2.017	3 30 16.51	131.17	15 27 18.8	615.8	66.30	15 24.8	56 28.2	II. N.
22	20 19.72	2.059	4 23 14.80	133.73	+ 19 6 2.7	+ 473.5	66.90	15 14.4	55 49.9	II. N.
23	21 9.63	2.097	5 17 13.91	136.05	21 43 29.3	310.4	67.44	15 5.5	55 17.3	II. N.
24	22 0.23	2.114	6 11 54.82	137.06	23 12 34.9	+ 133.6	67.63	14 58.2	54 50.5	II. N.
25	22 50.84	2.097	7 6 36.47	136.05	23 30 0.8	- 46.0	67.32	14 52.3	54 29.0	II. N.
26	23 40.63	2.046	8 0 28.25	132.94	22 37 1.0	217.1	66.49	14 47.9	54 12.9	
28	0 28.85	1.969	8 52 46.32	128.37	+ 20 39 12.4	- 368.4	65.30	14 45.0	54 2.2	
29	1 15.12	1.884	9 43 6.14	123.27	17 45 24.5	495.9	63.97	14 43.6	53 57.0	I. N.
30	1 59.40	1.807	10 31 26.89	118.60	14 6 1.7	596.6	62.76	14 43.9	53 58.0	I. N.
31	2 42.04	1.749	11 18 9.03	115.16	9 51 42.4	670.8	61.87	14 46.0	54 5.9	I. N.
Aug. 1	3 23.65	1.721	12 3 49.09	113.51	5 12 36.0	720.6	61.47	14 50.3	54 21.6	I. N.
2	4 5.03	1.730	12 49 15.09	114.05	+ 0 18 19.6	- 746.7	61.69	14 56.9	54 45.8	I. N.
3	4 47.11	1.781	13 35 23.29	117.09	- 4 41 30.6	748.0	62.57	15 6.0	55 19.2	I. N.
4	5 30.92	1.875	14 23 16.03	122.84	9 36 20.6	720.4	64.16	15 17.6	56 1.5	I. N.
5	6 17.56	2.014	15 13 58.48	131.18	14 13 22.0	657.4	66.38	15 31.3	56 52.2	I. N.
6	7 8.02	2.193	16 8 31.04	141.81	18 16 14.3	548.2	69.09	15 46.8	57 49.0	I. N.
7	8 2.97	2.385	17 7 33.45	153.39	- 21 24 28.4	- 383.1	71.93	16 3.1	58 48.7	I. N.
8	9 2.31	2.550	18 11 0.17	163.35	23 14 58.2	- 160.4	74.24	16 18.8	59 46.3	I. S.
9	10 4.84	2.643	19 17 38.94	168.91	23 27 2.5	+ 104.4	75.48	16 32.2	60 35.4	I. S.
10	11 8.38	2.633	20 25 17.88	168.28	21 50 13.1	377.1	75.30	16 41.6	61 9.9	I. S.
11	12 10.53	2.534	21 31 33.69	162.32	18 30 5.7	614.4	73.88	16 45.6	61 24.6	I. II. S.
12	13 9.67	2.391	22 34 48.85	153.74	- 13 47 27.3	+ 786.5	71.84	16 43.6	61 17.4	II. N.
13	14 5.35	2.250	23 34 34.84	145.28	8 11 26.2	881.2	69.80	16 36.1	60 49.7	II. N.
14	14 57.97	2.140	0 31 17.74	138.68	- 2 12 2.0	904.8	68.19	16 24.2	60 6.1	II. N.
15	15 48.46	2.073	1 25 51.60	134.58	+ 3 44 33.7	869.5	67.20	16 9.5	59 12.4	II. N.
16	16 37.80	2.043	2 19 16.74	132.89	+ 9 17 24.0	+ 787.9	66.81	15 53.8	58 14.7	II. N.

AT TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Center.	Diff. for 1 Hour of Long.	Geocentric Declination of Center.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi- diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	" "	"	s	"	"	
Aug. 16	16 37.80	2.043	2 19 16.74	132.89	+ 9 17 24.0	+ 787.9	66.81	15 53.8	58 14.7	II. N.
17	17 26.88	2.049	3 12 26.38	133.16	14 10 17.2	671.1	66.91	15 38.4	57 18.0	II. N.
18	18 16.33	2.073	4 5 58.18	134.60	18 10 46.8	527.3	67.28	15 24.3	56 26.2	II. N.
19	19 6.42	2.099	5 0 8.30	136.19	21 9 23.2	363.0	67.66	15 12.1	55 41.4	II. N.
20	19 57.02	2.113	5 54 48.79	136.96	22 59 30.1	186.2	67.81	15 2.1	55 4.7	II. N.
21	20 47.62	2.099	6 49 30.08	136.17	+ 23 37 51.3	+ 3.9	67.54	14 54.3	54 36.3	II. N.
22	21 37.55	2.056	7 43 30.40	133.56	23 5 2.8	- 167.9	66.80	14 48.8	54 16.0	II. N.
23	22 26.12	1.987	8 36 9.36	129.49	21 25 32.8	326.2	65.67	14 45.2	54 2.9	II. N.
24	23 12.90	1.907	9 27 0.13	124.70	18 47 1.1	462.2	64.37	14 43.5	53 56.5	II. N.
25	23 57.76	1.832	10 15 55.69	120.02	15 19 8.0	572.6	63.10	14 43.3	53 56.1	
27	0 40.92	1.769	11 3 8.74	116.26	+ 11 12 27.0	- 656.3	62.08	14 44.8	54 1.4	
28	1 22.84	1.729	11 49 7.80	113.96	6 37 36.5	713.6	61.47	14 47.8	54 12.4	I. N.
29	2 4.21	1.722	12 34 32.89	113.49	+ 1 45 1.7	745.0	61.39	14 52.4	54 29.2	I. N.
30	2 45.81	1.750	13 20 12.18	115.18	- 3 14 57.1	750.4	61.93	14 58.7	54 52.4	I. N.
31	3 28.54	1.817	14 6 59.73	119.20	8 11 34.9	727.7	63.10	15 6.9	55 22.4	I. N.
Sept. 1	4 13.36	1.923	14 55 52.91	125.64	- 12 52 53.6	- 672.8	64.90	15 16.9	55 59.4	I. N.
2	5 1.20	2.067	15 47 47.74	134.26	17 4 47.9	579.5	67.21	15 29.0	56 43.5	I. N.
3	5 52.80	2.234	16 43 29.10	144.32	20 30 23.1	440.3	69.78	15 42.6	57 33.5	I. N.
4	6 48.46	2.400	17 43 14.20	154.25	22 50 12.3	250.3	72.22	15 57.4	58 27.7	I. N.
5	7 47.68	2.524	18 46 33.38	161.76	23 44 42.4	- 15.6	73.98	16 12.1	59 21.8	I. S.
6	8 49.05	2.574	19 52 2.45	164.80	- 22 59 13.8	+ 244.5	74.64	16 25.6	60 11.4	I. S.
7	9 50.63	2.542	20 57 43.65	162.84	20 29 53.6	497.6	74.12	16 36.3	60 50.5	I. S.
8	10 50.62	2.450	22 1 49.74	157.24	16 26 43.5	708.8	72.73	16 42.5	61 13.3	I. S.
9	11 48.04	2.333	23 3 21.03	150.34	11 11 42.9	854.1	71.02	16 43.3	61 16.2	I. S.
10	12 42.80	2.232	0 2 12.16	144.17	- 5 13 25.6	925.1	69.51	16 38.3	60 58.0	II. S.
11	13 35.44	2.160	0 58 55.78	139.83	+ 0 58 39.6	+ 924.1	68.45	16 28.2	60 21.0	II. N.
12	14 26.78	2.123	1 54 21.09	137.63	6 57 56.9	862.9	67.96	16 14.5	59 30.5	II. N.
13	15 17.63	2.117	2 49 16.69	137.26	12 22 33.0	753.1	67.92	15 58.6	58 32.3	II. N.
14	16 8.58	2.132	3 44 19.02	138.05	16 55 36.6	607.2	68.18	15 42.3	57 32.5	II. N.
15	16 59.93	2.147	4 39 44.84	139.07	20 24 59.3	436.5	68.48	15 26.9	56 36.0	II. N.
16	17 51.56	2.152	5 35 27.74	139.33	+ 22 42 58.4	+ 252.0	68.57	15 13.4	55 46.3	II. N.
17	18 43.03	2.132	6 31 0.63	138.15	23 46 9.5	+ 64.3	68.25	15 2.3	55 5.7	II. S.
18	19 33.68	2.084	7 25 44.74	135.28	23 35 20.6	- 116.4	67.47	14 53.9	54 35.0	II. S.
19	20 22.90	2.013	8 19 2.49	131.08	22 15 5.5	281.7	66.31	14 48.3	54 14.2	II. S.
20	21 10.27	1.932	9 10 29.05	126.14	19 52 49.5	425.8	64.95	14 45.2	54 2.8	II. S.
21	21 55.69	1.853	9 59 58.05	121.37	+ 16 37 43.9	- 545.5	63.61	14 44.4	53 59.9	II. S.
22	22 39.35	1.787	10 47 41.46	117.43	12 39 50.6	639.6	62.49	14 45.6	54 4.2	II. S.
23	23 21.70	1.744	11 34 5.97	114.86	8 9 28.7	707.7	61.74	14 48.4	54 14.6	
25	0 3.35	1.730	12 19 48.73	114.02	+ 3 17 5.3	749.6	61.50	14 52.7	54 30.3	
26	0 45.05	1.719	13 5 34.03	115.11	- 1 46 34.9	764.0	61.82	14 58.2	54 50.5	I. N. S.
27	1 27.60	1.692	13 52 10.74	118.31	- 6 50 8.6	- 748.6	62.75	15 4.8	55 14.7	I. N.
28	2 11.80	1.690	14 40 29.87	123.64	11 41 5.1	700.2	64.25	15 12.4	55 42.8	I. N.
29	2 58.63	2.010	15 31 20.54	130.87	16 5 17.6	614.1	66.24	15 21.1	56 14.8	I. N.
30	3 48.59	2.155	16 25 22.46	139.42	19 46 46.5	485.8	68.51	15 31.0	56 50.8	I. N.
Oct. 1	4 42.02	2.297	17 22 53.76	148.07	22 28 0.4	- 312.9	70.73	15 41.8	57 30.4	I. N.

AT TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Center.	Diff. for 1 Hour of Long.	Geocentric Declination of Center.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ' "	"	s	"	"	
Oct. 1	4 42.02	2.297	17 22 53.76	148.07	-22 28 0.4	-312.9	70.73	15 41.8	57 30.4	I. N.
2	5 38.64	2.413	18 23 36.82	155.09	23 51 38.2	-99.2	72.48	15 53.3	58 12.7	I. S.
3	6 37.44	2.476	19 26 31.27	158.78	23 43 46.5	+141.3	73.37	16 5.0	58 55.6	I. S.
4	7 36.91	2.470	20 30 5.85	158.43	21 58 4.9	385.4	73.25	16 16.0	59 36.1	I. S.
5	8 35.54	2.409	21 32 49.33	154.76	18 38 34.9	606.0	72.30	16 25.3	60 10.3	I. S.
6	9 32.32	2.320	22 33 42.01	149.52	-13 59 31.7	+779.9	70.96	16 31.6	60 33.4	I. S.
7	10 27.00	2.237	23 32 28.58	144.53	8 22 46.6	892.7	69.67	16 33.9	60 41.8	I. S.
8	11 19.95	2.179	0 29 30.74	140.96	-2 14 17.2	938.3	68.74	16 31.5	60 33.0	I. S.
9	12 11.86	2.153	1 25 30.79	139.38	+3 59 1.4	917.5	68.34	16 24.5	60 7.1	II. S.
10	13 3.52	2.156	2 21 15.08	139.58	9 51 42.5	836.3	68.41	16 13.4	59 26.4	II. S.
11	13 55.52	2.179	3 17 20.56	140.97	+15 1 34.9	+705.4	68.83	15 59.6	58 35.8	II. S.
12	14 48.17	2.206	4 14 4.46	142.61	19 10 59.0	536.5	69.31	15 44.5	57 40.4	II. S.
13	15 41.31	2.217	5 11 18.28	143.30	22 7 41.0	344.3	69.53	15 29.5	56 45.3	II. S.
14	16 34.40	2.200	6 8 28.80	142.23	23 45 25.1	+144.2	69.34	15 15.8	55 55.1	II. S.
15	17 26.64	2.147	7 4 48.38	139.08	24 3 51.2	-50.1	68.57	15 4.3	55 12.9	II. S.
16	18 17.26	2.067	7 59 30.76	134.24	+23 7 41.4	-227.4	67.33	14 55.5	54 40.5	II. S.
17	19 5.77	1.973	8 52 5.58	128.60	21 5 4.5	381.6	65.83	14 49.6	54 19.1	II. S.
18	19 52.02	1.880	9 42 24.86	123.11	18 5 50.6	510.3	64.32	14 46.7	54 8.5	II. S.
19	20 36.25	1.804	10 30 42.10	118.55	14 20 13.0	613.7	63.02	14 46.6	54 8.1	II. S.
20	21 18.94	1.754	11 17 26.98	115.48	9 58 11.2	692.4	62.10	14 49.0	54 16.7	II. S.
21	22 0.76	1.734	12 3 19.75	114.25	+5 9 34.4	-746.5	61.70	14 53.4	54 33.0	II. S.
22	22 42.49	1.747	12 49 7.29	115.07	+0 4 28.7	774.4	61.88	14 59.5	54 55.3	II. S.
23	23 24.98	1.797	13 35 40.19	118.04	-5 6 3.7	773.0	62.67	15 6.7	55 21.7	
25	0 9.09	1.881	14 23 50.23	123.14	10 9 25.8	737.6	64.06	15 14.6	55 50.6	
26	0 55.62	1.999	15 14 26.45	130.15	14 50 53.7	662.6	65.95	15 22.8	56 20.9	I. N.
27	1 45.22	2.136	16 8 7.45	138.39	-18 53 31.9	-542.8	68.14	15 31.1	56 51.4	I. N.
28	2 38.18	2.273	17 5 9.76	146.65	21 58 56.4	376.8	70.29	15 39.4	57 21.7	I. N.
29	3 34.15	2.381	18 5 14.05	153.26	23 49 16.4	-169.0	71.98	15 47.4	57 51.1	I. N.
30	4 32.14	2.437	19 7 19.20	156.51	24 10 36.8	+65.1	72.83	15 55.2	58 19.6	I. N.
31	5 30.63	2.426	20 9 54.84	155.80	22 56 37.9	303.4	72.70	16 2.5	58 46.5	I. S.
Nov. 1	6 28.14	2.359	21 11 31.71	151.86	-20 10 33.1	+521.9	71.74	16 9.1	59 10.8	I. S.
2	7 23.72	2.269	22 11 12.25	146.42	16 4 20.2	701.5	70.36	16 14.5	59 30.7	I. S.
3	8 17.15	2.184	23 8 43.07	141.31	10 55 59.9	831.1	69.03	16 18.2	59 44.1	I. S.
4	9 8.81	2.126	0 4 28.11	137.79	-5 6 50.2	905.1	68.06	16 19.4	59 48.5	I. S.
5	9 59.49	2.103	0 59 13.58	136.40	+1 0 21.0	921.0	67.65	16 17.6	59 41.9	I. S.
6	10 50.06	2.116	1 53 52.74	137.20	+7 2 18.2	+879.2	67.82	16 12.5	59 23.4	I. S.
7	11 41.31	2.157	2 49 12.71	139.68	12 36 16.3	781.9	68.44	16 4.4	58 53.4	I. S.
8	12 33.73	2.210	3 45 42.73	142.85	17 21 15.9	635.6	69.25	15 53.6	58 13.9	II. N. S.
9	13 27.32	2.251	4 43 23.82	145.33	20 59 49.4	452.0	69.92	15 41.2	57 28.4	II. N.
10	14 21.57	2.259	5 41 44.23	145.92	23 20 0.1	246.8	70.13	15 28.3	56 41.0	II. N.
11	15 15.51	2.224	6 39 46.13	143.76	+24 16 54.1	+38.7	69.67	15 16.0	55 55.8	II. S.
12	16 8.06	2.147	7 36 24.29	139.07	23 52 49.5	-155.6	68.54	15 5.2	55 16.1	II. S.
13	16 58.37	2.043	8 30 47.90	132.75	22 15 41.5	325.3	66.98	14 56.6	54 44.8	II. S.
14	17 46.07	1.933	9 22 34.20	126.15	19 36 26.0	466.0	65.25	14 50.8	54 23.5	II. S.
15	18 31.26	1.836	10 11 49.64	120.35	+16 6 38.6	-578.0	63.68	14 48.1	54 13.4	II. S.

AT TRANSIT OF MOON'S CENTER OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.		Diff. for 1 Hour of Long.	Right Ascension of Center.			Diff. for 1 Hour of Long.	Geocentric Declination of Center.			Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.	
	h	m	m	h	m	s	s	°	'	"	"	s	"	"		
Nov. 15	18	31.26	1.836	10 11 49.64	120.35	+ 16 6 38.6	- 578.0	63.68	14 48.1	54 13.4	II. S.					
16	19 14.43	1.766	10 59 3.23	116.10	11 57 10.2	664.9	62.49	14 48.4	54 14.5	II. S.						
17	19 56.29	1.727	11 44 58.42	113.87	7 17 50.1	727.9	61.82	14 51.6	54 26.3	II. S.						
18	20 37.71	1.728	12 30 27.01	113.93	+ 2 17 53.8	767.8	61.77	14 57.4	54 47.6	II. S.						
19	21 19.63	1.770	13 16 25.50	116.37	- 2 53 0.3	782.1	62.38	15 5.3	55 16.8	II. S.						
20	22 3.02	1.852	14 3 52.63	121.29	- 8 3 45.2	- 765.9	63.67	15 14.8	55 51.5	II. S.						
21	22 48.84	1.971	14 53 45.96	128.50	13 0 40.9	711.6	65.55	15 25.0	56 29.0	II. S.						
22	23 37.91	2.120	15 46 54.93	137.45	17 26 52.0	610.9	67.86	15 35.3	57 6.8							
24	0 30.71	2.277	16 43 47.82	146.89	21 2 24.0	457.9	70.25	15 44.9	57 41.9							
25	1 27.05	2.410	17 44 14.05	154.85	23 26 24.9	254.5	72.24	15 53.2	58 12.5	I. N. S.						
26	2 25.90	2.481	18 47 11.45	159.17	- 24 21 14.7	- 15.5	73.35	15 59.9	58 36.9	I. N. S.						
27	3 25.52	2.473	19 50 55.04	158.64	23 37 34.5	+ 232.9	73.29	16 4.7	58 54.6	I. S.						
28	4 24.05	2.394	20 53 32.70	153.93	21 17 35.3	461.6	72.21	16 7.8	59 6.2	I. S.						
29	5 20.18	2.280	21 53 46.64	147.06	17 33 54.6	648.8	70.56	16 9.5	59 12.1	I. S.						
30	6 13.53	2.167	22 51 12.79	140.28	12 45 28.6	784.5	68.86	16 9.7	59 12.9	I. S.						
Dec. 1	7 4.47	2.083	23 46 13.92	135.19	- 7 13 23.1	+ 867.2	67.53	16 8.6	59 9.0	I. S.						
2	7 53.84	2.039	0 39 41.16	132.53	- 1 18 35.7	898.3	66.80	16 6.3	59 0.3	I. S.						
3	8 42.69	2.039	1 32 36.71	132.52	+ 4 38 38.1	879.4	66.73	16 2.5	58 46.4	I. S.						
4	9 32.02	2.077	2 26 0.83	134.82	10 18 32.1	811.8	67.28	15 57.0	58 26.5	I. S.						
5	10 22.60	2.140	3 20 40.79	138.67	15 21 42.7	696.3	68.21	15 50.0	58 0.8	I. S.						
6	11 14.83	2.210	4 16 59.63	142.83	+ 19 29 51.2	+ 537.7	69.21	15 41.5	57 29.6	I. S.						
7	12 8.52	2.257	5 14 46.13	145.71	22 27 28.0	315.9	69.95	15 31.9	56 54.4	II. N. S.						
8	13 2.86	2.261	6 13 12.38	145.95	24 4 19.7	+ 137.1	70.03	15 21.8	56 17.1	II. N.						
9	13 56.66	2.213	7 11 5.84	142.98	24 17 31.0	- 69.2	69.34	15 11.8	55 40.6	II. S.						
10	14 48.71	2.119	8 7 13.64	137.32	23 11 36.9	255.9	67.98	15 2.8	55 7.5	II. S.						
11	15 38.18	2.001	9 0 46.54	130.31	+ 20 56 45.3	- 413.0	66.23	14 55.5	54 40.5	II. S.						
12	16 24.83	1.886	9 51 29.72	123.41	17 45 32.6	537.8	64.46	14 50.3	54 21.5	II. S.						
13	17 8.93	1.791	10 39 39.53	117.69	13 50 32.2	632.6	62.95	14 47.8	54 12.5	II. S.						
14	17 51.12	1.729	11 25 54.34	113.91	9 22 56.1	701.4	61.92	14 48.3	54 14.3	II. S.						
15	18 32.25	1.703	12 11 5.41	112.44	+ 4 32 26.5	747.3	61.51	14 51.9	54 27.4	II. S.						
16	19 13.29	1.721	12 56 11.54	113.52	- 0 32 0.7	- 771.0	61.78	14 58.4	54 51.3	II. S.						
17	19 55.31	1.786	13 42 16.04	117.32	5 41 8.1	769.9	62.79	15 7.6	55 25.1	II. S.						
18	20 39.39	1.894	14 30 24.63	123.85	10 43 52.2	737.8	64.50	15 19.0	56 6.8	II. S.						
19	21 26.59	2.044	15 21 40.98	132.88	15 25 59.1	665.0	66.82	15 31.8	56 53.8	II. S.						
20	22 17.76	2.221	16 16 56.43	143.56	19 29 6.7	541.2	69.49	15 45.0	57 42.2	II. S.						
21	23 13.25	2.397	17 16 31.14	154.10	- 22 31 12.3	- 359.6	72.05	15 57.4	58 27.7							
23	0 12.47	2.526	18 19 50.76	161.83	24 9 44.3	- 125.7	73.90	16 7.9	59 6.4							
24	1 13.79	2.566	19 25 16.59	164.32	24 7 55.4	+ 136.8	74.52	16 15.6	59 34.5	I. N. S.						
25	2 14.92	2.514	20 30 31.23	161.01	22 21 14.7	392.2	73.79	16 19.8	59 50.0	I. S.						
26	3 13.85	2.390	21 33 33.10	153.69	18 59 39.9	666.8	72.09	16 20.5	59 52.8	I. S.						
27	4 9.53	2.249	22 33 19.33	145.17	- 14 23 40.4	+ 762.6	70.04	16 18.2	59 44.3	I. S.						
28	5 1.97	2.126	23 29 51.09	137.81	8 57 51.4	856.4	68.22	16 13.6	59 27.2	I. S.						
29	5 51.93	2.044	0 23 53.24	132.84	- 3 6 4.4	893.6	66.96	16 7.3	59 4.2	I. S.						
30	6 40.47	2.009	1 16 30.58	130.77	+ 2 50 24.5	880.9	66.41	16 0.1	58 37.6	I. S.						
31	7 28.74	2.020	2 8 51.22	131.39	+ 8 32 45.7	+ 823.6	66.54	15 52.3	58 9.2	I. S.						

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Jan. 0	23 30.7	18 10 29.67	-24 33 6.1	6.2	2.3	0.17	Feb. 16	1 17.4	22 58 50.81	-4 39 8.4	10.2	3.8	0.25
1	23 33.7	18 17 24.61	24 36 18.4	6.2	2.3	0.17	17	1 14.8	23 0 11.62	4 13 42.8	10.6	4.0	0.26
2	23 36.7	18 24 21.27	24 38 9.6	6.2	2.3	0.17	18	1 11.6	23 0 56.54	3 52 19.9	10.9	4.1	0.27
3	23 39.7	18 31 19.56	24 38 38.4	6.2	2.3	0.17	19	1 7.8	23 1 5.03	3 35 18.6	11.2	4.2	0.28
4	23 42.7	18 38 19.37	24 37 43.7	6.1	2.3	0.17	20	1 3.4	23 0 37.14	3 22 53.8	11.6	4.4	0.29
5	23 45.8	18 45 20.58	-24 35 24.4	6.1	2.3	0.17	21	0 58.4	22 59 33.67	3 15 15.8	12.0	4.5	0.30
6	23 48.9	18 52 23.05	24 31 39.1	6.1	2.3	0.17	22	0 52.9	22 57 56.17	3 12 30.4	12.3	4.7	0.31
7	23 52.0	18 59 26.69	24 26 26.8	6.1	2.3	0.17	23	0 46.8	22 55 47.03	3 14 35.8	12.6	4.8	0.32
8	23 55.1	19 6 31.40	24 19 46.8	6.1	2.3	0.17	24	0 40.3	22 53 9.43	3 21 24.3	12.9	4.9	0.33
9	23 58.3	19 13 37.06	24 11 38.0	6.1	2.3	0.17	25	0 33.3	22 50 7.33	3 32 43.1	13.2	5.0	0.33
11	0 1.5	19 20 43.56	-24 1 59.7	6.1	2.3	0.17	26	0 26.1	22 46 45.35	3 48 9.7	13.5	5.0	0.34
12	0 4.6	19 27 50.78	23 50 51.0	6.1	2.3	0.17	27	0 18.5	22 43 8.53	4 7 17.9	13.8	5.1	0.34
13	0 7.8	19 34 58.56	23 38 10.9	6.1	2.3	0.17	28	0 10.8	22 39 22.38	4 29 35.0	13.9	5.2	0.35
14	0 11.0	19 42 6.81	23 23 59.0	6.1	2.4	0.17	29	0 3.1	22 35 32.39	4 54 25.4	14.0	5.2	0.36
15	0 14.2	19 49 15.38	23 8 14.4	6.2	2.4	0.17	29	23 55.4	22 31 43.92	5 21 10.9	14.0	5.3	0.36
16	0 17.4	19 56 24.11	-22 50 56.6	6.2	2.4	0.17	Mar. 1	23 47.7	22 28 2.11	5 49 13.1	14.0	5.3	0.36
17	0 20.6	20 3 32.87	22 32 5.3	6.2	2.4	0.17	2	23 40.3	22 24 31.58	6 17 54.1	14.0	5.3	0.36
18	0 23.8	20 10 41.49	22 11 39.8	6.3	2.4	0.17	3	23 33.1	22 21 16.31	6 46 39.0	13.9	5.3	0.35
19	0 27.0	20 17 49.82	21 49 40.0	6.3	2.4	0.17	4	23 26.3	22 18 19.60	7 14 56.8	13.9	5.3	0.35
20	0 30.2	20 24 57.64	21 26 5.9	6.4	2.4	0.17	5	23 19.8	22 15 44.09	7 42 20.0	13.8	5.3	0.35
21	0 33.3	20 32 4.77	-21 0 57.5	6.4	2.4	0.17	6	23 13.6	22 13 31.63	8 8 25.4	13.6	5.2	0.35
22	0 36.4	20 39 10.97	20 34 15.0	6.4	2.4	0.17	7	23 7.9	22 11 43.50	8 32 54.7	13.4	5.1	0.34
23	0 39.5	20 46 16.00	20 5 58.9	6.5	2.4	0.17	8	23 2.6	22 10 20.38	8 55 33.5	13.2	5.1	0.34
24	0 42.6	20 53 19.55	19 36 9.9	6.5	2.5	0.17	9	22 57.7	22 9 22.47	9 16 11.0	13.1	5.0	0.33
25	0 45.7	21 0 21.33	19 4 49.1	6.6	2.5	0.17	10	22 53.2	22 8 49.52	9 34 39.9	12.9	4.9	0.33
26	0 48.8	21 7 20.93	-18 31 58.2	6.6	2.5	0.17	11	22 49.2	22 8 41.00	9 50 55.5	12.6	4.8	0.33
27	0 51.8	21 14 17.99	17 57 39.2	6.7	2.5	0.18	12	22 45.5	22 8 56.14	10 4 55.3	12.4	4.8	0.32
28	0 54.7	21 21 12.05	17 21 54.5	6.7	2.5	0.18	13	22 42.1	22 9 33.95	10 16 38.3	12.2	4.7	0.32
29	0 57.6	21 28 2.54	16 44 47.0	6.8	2.6	0.18	14	22 39.2	22 10 33.37	10 26 5.2	12.0	4.6	0.31
30	1 0.4	21 34 48.83	16 6 20.5	6.9	2.6	0.18	15	22 36.6	22 11 53.27	10 33 17.3	11.8	4.5	0.31
31	1 3.2	21 41 30.24	-15 26 40.1	7.0	2.6	0.18	16	22 34.3	22 13 32.49	-10 38 16.9	11.6	4.5	0.31
Feb. 1	1 5.9	21 48 5.88	14 45 51.7	7.1	2.7	0.18	17	22 32.3	22 15 29.83	10 41 6.8	11.4	4.4	0.30
2	1 8.4	21 54 34.78	14 4 2.5	7.2	2.7	0.19	18	22 30.6	22 17 44.15	10 41 50.1	11.2	4.3	0.30
3	1 10.8	22 0 55.87	13 21 20.7	7.3	2.8	0.19	19	22 29.2	22 20 14.35	10 40 29.8	11.0	4.2	0.29
4	1 13.1	22 7 7.91	12 37 55.6	7.4	2.8	0.20	20	22 28.0	22 22 59.38	10 37 9.1	10.8	4.1	0.28
5	1 15.1	22 13 9.52	-11 53 58.7	7.6	2.9	0.20	21	22 27.0	22 25 58.21	-10 31 51.4	10.6	4.1	0.28
6	1 17.0	22 18 59.16	11 9 43.3	7.7	2.9	0.20	22	22 26.2	22 29 9.90	10 24 40.0	10.4	4.0	0.27
7	1 18.6	22 24 35.07	10 25 24.1	7.9	3.0	0.21	23	22 25.6	22 32 33.57	10 15 38.2	10.2	4.0	0.27
8	1 20.0	22 29 55.35	9 41 18.2	8.1	3.0	0.21	24	22 25.3	22 36 8.41	10 4 49.0	10.0	3.9	0.26
9	1 21.1	22 34 57.97	8 57 43.9	8.3	3.1	0.22	25	22 25.2	22 39 53.66	9 52 15.2	9.9	3.8	0.26
10	1 21.9	22 39 40.73	-8 15 1.8	8.5	3.2	0.22	26	22 25.2	22 43 48.62	-9 37 59.9	9.8	3.8	0.26
11	1 22.3	22 44 1.31	7 33 34.1	8.7	3.3	0.22	27	22 25.3	22 47 52.67	9 22 5.6	9.7	3.7	0.25
12	1 22.3	22 47 57.37	6 53 44.8	9.0	3.4	0.23	28	22 25.6	22 52 5.21	9 4 35.1	9.5	3.6	0.25
13	1 21.8	22 51 26.54	6 15 58.7	9.3	3.5	0.23	29	22 26.0	22 56 25.73	8 45 31.0	9.4	3.5	0.24
14	1 20.9	22 54 26.55	5 40 40.5	9.6	3.6	0.24	30	22 26.5	23 0 53.75	8 24 55.6	9.2	3.5	0.24
15	1 19.4	22 56 55.27	-5 8 15.4	9.9	3.7	0.25	31	22 27.1	23 5 28.83	-8 2 51.2	9.0	3.4	0.24
16	1 17.4	22 58 50.81	-4 39 8.4	10.2	3.8	0.25	Apr. 1	22 27.8	23 10 10.63	-7 39 19.9	8.8	3.4	0.23

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	" "	"	"	s		h m	h m s	" "	"	"	s
Apr. 1	22 27.8	23 10 10.63	- 7 39 19.9	8.8	3.4	0.23	May 17	0 44.2	4 24 14.60	+23 13 57.6	7.2	2.7	0.19
2	22 28.7	23 14 58.84	7 14 23.8	8.7	3.3	0.23	18	0 48.9	4 32 51.59	23 39 48.7	7.3	2.7	0.20
3	22 29.7	23 19 53.15	6 48 4.8	8.6	3.3	0.22	19	0 53.5	4 41 22.20	24 3 1.1	7.4	2.8	0.20
4	22 30.8	23 24 53.32	6 20 24.8	8.5	3.2	0.22	20	0 58.0	4 49 45.29	24 23 35.0	7.4	2.8	0.21
5	22 32.0	23 29 59.14	5 51 25.7	8.4	3.2	0.21	21	1 2.3	4 57 59.85	24 41 31.7	7.5	2.9	0.21
6	22 33.3	23 35 10.43	- 5 21 9.3	8.3	3.2	0.21	22	1 6.4	5 6 4.99	+24 56 53.7	7.6	2.9	0.22
7	22 34.6	23 40 27.05	4 49 37.5	8.2	3.1	0.21	23	1 10.3	5 13 59.89	25 9 44.7	7.8	3.0	0.22
8	22 36.0	23 45 48.89	4 16 51.6	8.1	3.1	0.20	24	1 14.0	5 21 43.81	25 20 9.3	7.9	3.0	0.23
9	22 37.4	23 51 15.89	3 42 53.6	8.0	3.0	0.20	25	1 17.5	5 29 16.12	25 28 12.8	8.1	3.1	0.23
10	22 38.9	23 56 48.01	3 7 45.1	7.9	3.0	0.20	26	1 20.8	5 36 36.24	25 34 0.8	8.2	3.2	0.23
11	22 40.5	0 2 25.25	- 2 31 27.3	7.9	3.0	0.20	27	1 23.9	5 43 43.68	+25 37 39.3	8.4	3.2	0.24
12	22 42.3	0 8 7.64	1 54 2.0	7.8	3.0	0.20	28	1 26.8	5 50 37.92	25 39 14.5	8.5	3.3	0.24
13	22 44.2	0 13 55.22	1 15 31.0	7.7	2.9	0.19	29	1 29.6	5 57 18.57	25 38 52.9	8.7	3.4	0.25
14	22 46.2	0 19 48.04	- 0 35 55.7	7.6	2.9	0.19	30	1 32.2	6 3 45.24	25 36 41.1	8.9	3.4	0.25
15	22 48.3	0 25 46.19	+ 0 4 41.9	7.5	2.9	0.19	31	1 34.5	6 9 57.54	25 32 45.6	9.0	3.5	0.26
16	22 50.5	0 31 49.77	+ 0 46 20.2	7.4	2.8	0.18	June 1	1 36.5	6 15 55.14	+25 27 12.9	9.2	3.5	0.26
17	22 52.7	0 37 58.93	1 28 57.1	7.4	2.8	0.18	2	1 38.3	6 21 37.71	25 20 9.9	9.4	3.6	0.27
18	22 54.9	0 44 13.83	2 12 30.7	7.3	2.7	0.18	3	1 39.8	6 27 4.94	25 11 43.2	9.7	3.7	0.27
19	22 57.2	0 50 34.65	2 56 58.9	7.2	2.7	0.18	4	1 41.0	6 32 16.51	25 1 58.9	10.0	3.8	0.28
20	22 59.6	0 57 1.60	3 42 19.2	7.1	2.7	0.18	5	1 42.0	6 37 12.12	24 51 3.4	10.2	3.8	0.28
21	23 2.1	1 3 34.90	+ 4 28 29.2	7.0	2.7	0.18	6	1 42.7	6 41 51.47	+24 39 3.2	10.4	3.9	0.29
22	23 4.8	1 10 14.76	5 15 25.5	7.0	2.6	0.18	7	1 43.1	6 46 14.23	24 26 4.5	10.6	4.0	0.29
23	23 7.7	1 17 1.40	6 3 5.1	6.9	2.6	0.18	8	1 43.3	6 50 20.11	24 12 13.1	10.8	4.1	0.30
24	23 10.8	1 23 55.06	6 51 24.6	6.9	2.6	0.18	9	1 43.2	6 54 8.80	23 57 35.4	11.1	4.2	0.31
25	23 14.0	1 30 55.97	7 40 19.7	6.9	2.6	0.18	10	1 42.8	6 57 39.95	23 42 17.5	11.3	4.3	0.31
26	23 17.3	1 38 4.39	+ 8 29 46.2	6.8	2.6	0.17	11	1 42.1	7 0 53.24	+23 26 25.2	11.6	4.4	0.32
27	23 20.6	1 45 20.53	9 19 38.9	6.8	2.6	0.17	12	1 41.1	7 3 48.37	23 10 4.3	11.8	4.5	0.32
28	23 24.0	1 52 44.56	10 9 51.9	6.7	2.6	0.17	13	1 39.8	7 6 25.02	22 53 20.6	12.1	4.6	0.33
29	23 27.4	2 0 16.64	11 0 18.7	6.7	2.5	0.17	14	1 38.1	7 8 42.90	22 36 19.9	12.4	4.7	0.34
30	23 31.0	2 7 56.89	11 50 52.2	6.7	2.5	0.17	15	1 36.1	7 10 41.72	22 19 8.1	12.6	4.8	0.34
May 1	23 34.8	2 15 45.34	+12 41 24.0	6.7	2.5	0.17	16	1 33.8	7 12 21.25	+22 1 50.8	12.9	4.9	0.35
2	23 38.8	2 23 41.88	13 31 45.5	6.6	2.5	0.17	17	1 31.2	7 13 41.33	21 44 33.9	13.1	5.0	0.35
3	23 43.0	2 31 46.44	14 21 46.7	6.6	2.5	0.17	18	1 28.3	7 14 41.82	21 27 22.7	13.4	5.1	0.36
4	23 47.4	2 39 58.79	15 11 17.0	6.6	2.5	0.17	19	1 25.0	7 15 22.66	21 10 23.3	13.6	5.2	0.37
5	23 51.9	2 48 18.56	16 0 5.3	6.6	2.5	0.17	20	1 21.4	7 15 43.90	20 53 40.8	13.8	5.3	0.37
6	23 56.4	2 56 45.28	+16 47 59.5	6.6	2.5	0.18	21	1 17.5	7 15 45.68	+20 37 20.9	14.1	5.4	0.38
8	0 1.0	3 5 18.34	17 34 47.5	6.7	2.5	0.18	22	1 13.3	7 15 28.26	20 21 28.9	14.3	5.5	0.38
9	0 5.6	3 13 56.97	18 20 16.8	6.7	2.5	0.18	23	1 8.8	7 14 52.09	20 6 10.1	14.6	5.6	0.39
10	0 10.3	3 22 40.22	19 4 14.3	6.7	2.5	0.18	24	1 4.0	7 13 57.76	19 51 30.0	14.8	5.6	0.39
11	0 15.1	3 31 27.05	19 46 27.9	6.7	2.6	0.18	25	0 58.9	7 12 46.06	19 37 33.6	14.9	5.7	0.39
12	0 19.9	3 40 16.31	+20 26 45.9	6.8	2.6	0.18	26	0 53.4	7 11 17.97	+19 24 25.7	15.1	5.7	0.40
13	0 24.8	3 49 6.76	21 4 57.6	6.8	2.6	0.19	27	0 47.8	7 9 34.70	19 12 11.1	15.3	5.8	0.40
14	0 29.7	3 57 57.13	21 40 53.5	6.9	2.6	0.19	28	0 42.0	7 7 37.71	19 0 54.4	15.4	5.9	0.41
15	0 34.6	4 6 46.10	22 14 26.1	7.0	2.6	0.19	29	0 35.9	7 5 28.65	18 50 39.5	15.5	5.9	0.41
16	0 39.4	4 15 32.35	22 45 29.1	7.1	2.6	0.19	30	0 29.7	7 3 9.44	18 41 30.7	15.5	5.9	0.41
17	0 44.2	4 24 14.60	+23 13 57.6	7.2	2.7	0.19	July 1	0 23.4	7 0 42.12	+18 33 31.0	15.5	5.9	0.41
18	0 48.9	4 32 51.59	+23 39 48.7	7.3	2.7	0.20	2	0 17.0	6 58 8.97	+18 26 43.8	15.5	5.9	0.40



FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
July 1	0 23.4	7 0 42.12	+18 33 31.0	15.5	5.9	0.41	Aug. 15	23 50.2	9 28 56.00	+16 39 48.6	6.6	2.6	0.17
2	0 17.0	6 58 8.97	18 26 43.8	15.5	5.9	0.40	16	23 54.3	9 37 1.33	16 2 52.5	6.5	2.5	0.17
3	0 10.4	6 55 32.40	18 21 11.5	15.5	5.9	0.40	17	23 58.4	9 45 0.74	15 24 22.8	6.5	2.5	0.17
4	0 3.7	6 52 54.94	18 16 56.1	15.5	5.9	0.40	19	0 2.4	9 52 53.64	14 44 29.5	6.5	2.5	0.17
4	23 57.1	6 50 19.14	18 13 59.2	15.4	5.8	0.40	20	0 6.2	10 0 39.57	14 3 22.2	6.5	2.5	0.17
5	23 50.6	6 47 47.54	+18 12 21.1	15.3	5.8	0.40	21	0 9.9	10 8 18.23	+13 21 10.0	6.4	2.4	0.17
6	23 44.3	6 45 22.67	18 12 2.1	15.1	5.7	0.39	22	0 13.4	10 15 49.43	12 38 1.6	6.4	2.4	0.17
7	23 38.2	6 43 7.01	18 13 1.3	15.0	5.7	0.39	23	0 16.8	10 23 13.09	11 54 5.0	6.4	2.4	0.17
8	23 32.2	6 41 2.88	18 15 17.3	14.8	5.6	0.39	24	0 20.1	10 30 29.22	11 9 27.6	6.4	2.4	0.16
9	23 26.5	6 39 12.43	18 18 48.1	14.6	5.5	0.39	25	0 23.3	10 37 37.89	10 24 16.1	6.4	2.4	0.16
10	23 21.0	6 37 37.65	+18 23 30.5	14.3	5.4	0.38	26	0 26.4	10 44 39.22	+9 38 37.0	6.4	2.4	0.16
11	23 15.8	6 36 20.32	18 29 20.9	14.0	5.3	0.37	27	0 29.3	10 51 33.35	8 52 36.0	6.4	2.4	0.16
12	23 10.9	6 35 22.01	18 36 14.8	13.8	5.2	0.36	28	0 32.2	10 58 20.49	8 6 18.3	6.4	2.4	0.16
13	23 6.3	6 34 44.07	18 44 7.4	13.5	5.1	0.35	29	0 35.0	11 5 0.84	7 19 49.2	6.4	2.4	0.16
14	23 2.1	6 34 27.63	18 52 52.5	13.2	5.0	0.35	30	0 37.7	11 11 34.61	6 33 13.1	6.4	2.4	0.16
15	22 58.3	6 34 33.63	+19 2 23.5	12.9	4.9	0.34	31	0 40.2	11 18 2.05	+5 46 34.0	6.5	2.5	0.16
16	22 54.9	6 35 2.83	19 12 34.0	12.6	4.8	0.33	Sept. 1	0 42.6	11 24 23.42	4 59 55.3	6.5	2.5	0.16
17	22 51.8	6 35 55.83	19 23 16.4	12.3	4.7	0.32	2	0 44.8	11 30 38.93	4 13 20.6	6.5	2.5	0.16
18	22 49.1	6 37 13.06	19 34 22.3	12.0	4.5	0.32	3	0 47.0	11 36 48.82	3 26 52.9	6.5	2.5	0.16
19	22 46.8	6 38 54.82	19 45 43.0	11.6	4.4	0.32	4	0 49.1	11 42 53.33	2 40 35.2	6.6	2.5	0.17
20	22 45.0	6 41 1.28	+19 57 9.9	11.3	4.3	0.31	5	0 51.1	11 48 52.70	+1 54 30.0	6.6	2.5	0.17
21	22 43.6	6 43 32.52	20 8 33.3	11.0	4.2	0.30	6	0 53.1	11 54 47.15	1 8 39.9	6.7	2.5	0.17
22	22 42.6	6 46 28.53	20 19 43.3	10.7	4.1	0.29	7	0 55.0	12 0 36.89	+0 23 7.3	6.7	2.5	0.17
23	22 42.0	6 49 49.21	20 30 29.5	10.4	3.9	0.28	8	0 56.8	12 6 22.11	0 22 5.8	6.7	2.5	0.17
24	22 41.8	6 53 34.35	20 40 41.3	10.1	3.8	0.28	9	0 58.5	12 12 2.99	1 6 57.6	6.8	2.5	0.17
25	22 42.0	6 57 43.69	+20 50 7.7	9.8	3.7	0.27	10	1 0.2	12 17 39.69	-1 51 26.1	6.8	2.5	0.17
26	22 42.6	7 2 16.88	20 58 37.0	9.6	3.6	0.26	11	1 1.8	12 23 12.37	2 35 29.3	6.9	2.6	0.17
27	22 43.6	7 7 13.43	21 5 57.7	9.3	3.5	0.26	12	1 3.3	12 28 41.20	3 19 5.3	6.9	2.6	0.17
28	22 45.0	7 12 32.75	21 11 58.8	9.1	3.4	0.25	13	1 4.8	12 34 6.27	4 2 12.9	6.9	2.6	0.18
29	22 46.7	7 18 14.16	21 16 27.8	8.9	3.3	0.25	14	1 6.1	12 39 27.70	4 44 50.2	7.0	2.6	0.18
30	22 48.7	7 24 16.79	+21 19 13.4	8.7	3.2	0.24	15	1 7.5	12 44 45.57	-5 26 55.5	7.0	2.7	0.18
31	22 51.1	7 30 39.63	21 20 4.6	8.5	3.2	0.24	16	1 8.8	12 49 59.96	6 8 27.1	7.1	2.7	0.18
Aug. 1	22 53.9	7 37 21.54	21 18 50.7	8.3	3.1	0.23	17	1 10.1	12 55 10.91	6 49 23.4	7.1	2.7	0.18
2	22 57.0	7 44 21.21	21 15 22.1	8.1	3.1	0.22	18	1 11.3	13 0 18.45	7 29 42.8	7.2	2.7	0.18
3	23 0.3	7 51 37.13	21 9 30.2	7.9	3.0	0.22	19	1 12.4	13 5 22.57	8 9 23.8	7.3	2.7	0.18
4	23 3.9	7 59 7.67	+21 1 7.8	7.7	3.0	0.21	20	1 13.5	13 10 23.25	-8 48 24.6	7.3	2.8	0.19
5	23 7.5	8 6 51.06	20 50 9.4	7.6	2.9	0.21	21	1 14.5	13 15 20.43	9 26 43.3	7.4	2.8	0.19
6	23 11.5	8 14 45.43	20 36 31.6	7.4	2.9	0.20	22	1 15.4	13 20 14.05	10 4 17.9	7.5	2.8	0.19
7	23 15.7	8 22 48.81	20 20 12.3	7.3	2.8	0.20	23	1 16.2	13 25 4.00	10 41 6.5	7.6	2.8	0.19
8	23 19.9	8 30 59.20	20 1 12.1	7.2	2.8	0.19	24	1 17.0	13 29 50.11	11 17 7.2	7.7	2.9	0.20
9	23 24.2	8 39 14.64	+19 39 33.2	7.1	2.7	0.19	25	1 17.8	13 34 32.19	-11 52 17.6	7.8	2.9	0.21
10	23 28.5	8 47 33.24	19 15 20.0	7.0	2.7	0.19	26	1 18.5	13 39 10.01	12 26 35.3	7.9	3.0	0.21
11	23 32.9	8 55 53.22	18 48 38.5	6.9	2.6	0.18	27	1 19.2	13 43 43.30	12 59 57.8	7.9	3.0	0.21
12	23 37.3	9 4 12.90	18 19 35.5	6.8	2.6	0.18	28	1 19.8	13 48 11.74	13 32 22.4	8.0	3.1	0.21
13	23 41.7	9 12 30.70	17 48 20.0	6.8	2.6	0.18	29	1 20.3	13 52 34.93	14 3 46.2	8.1	3.1	0.21
14	23 46.0	9 20 45.50	+17 15 1.1	6.7	2.6	0.17	30	1 20.6	13 56 52.45	-14 34 6.0	8.2	3.2	0.21
15	23 50.2	9 28 56.00	+16 39 48.6	6.6	2.6	0.17	Oct. 1	1 20.8	14 1 3.80	-15 3 18.1	8.4	3.2	0.22

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Oct. 1	1 20.8	14 1 3.80	15 3 18.1	8.4	3.2	0.22	Nov. 15	22 32.9	14 14 8.74	11 6 9.1	8.2	3.1	0.21
2	1 20.9	14 5 8.34	15 31 18.9	8.5	3.2	0.22	16	22 33.7	14 18 53.07	11 34 1.5	8.1	3.1	0.21
3	1 20.8	14 9 5.44	15 58 4.3	8.6	3.3	0.22	17	22 34.7	14 23 49.58	12 3 8.4	7.9	3.0	0.20
4	1 20.6	14 12 54.34	16 23 29.6	8.8	3.3	0.23	18	22 35.9	14 28 56.76	12 33 13.2	7.7	3.0	0.20
5	1 20.3	14 16 34.16	16 47 29.8	8.9	3.4	0.23	19	22 37.2	14 34 13.30	13 4 1.2	7.5	2.9	0.19
6	1 19.9	14 20 3.96	17 9 58.9	9.1	3.4	0.24	20	22 38.7	14 39 38.07	13 35 19.0	7.4	2.8	0.19
7	1 19.4	14 23 22.62	17 30 51.0	9.3	3.5	0.24	21	22 40.3	14 45 10.09	14 6 54.6	7.3	2.8	0.19
8	1 18.6	14 26 29.01	17 49 59.3	9.4	3.6	0.25	22	22 42.0	14 50 48.55	14 38 38.2	7.2	2.7	0.19
9	1 17.6	14 29 21.78	18 7 16.2	9.6	3.7	0.25	23	22 43.8	14 56 32.75	15 10 20.7	7.1	2.7	0.19
10	1 16.3	14 31 59.41	18 22 33.0	9.8	3.7	0.26	24	22 45.7	15 2 22.14	15 41 54.3	7.0	2.6	0.18
11	1 14.7	14 34 20.36	18 35 40.3	10.0	3.8	0.27	25	22 47.6	15 8 16.18	16 13 11.7	6.9	2.6	0.18
12	1 12.7	14 36 22.86	18 46 27.7	10.2	3.9	0.27	26	22 49.6	15 14 14.44	16 44 7.2	6.9	2.6	0.18
13	1 10.4	14 38 5.07	18 54 43.8	10.4	4.0	0.28	27	22 51.7	15 20 16.58	17 14 34.8	6.8	2.6	0.18
14	1 7.7	14 39 25.05	19 0 15.5	10.7	4.0	0.28	28	22 53.8	15 26 22.31	17 44 29.8	6.8	2.6	0.18
15	1 4.7	14 40 20.80	19 2 49.6	10.9	4.1	0.29	29	22 56.0	15 32 31.39	18 13 48.2	6.7	2.5	0.18
16	1 1.3	14 40 50.27	19 2 11.2	11.1	4.2	0.30	30	22 58.3	15 38 43.61	18 42 26.0	6.6	2.5	0.17
17	0 57.5	14 40 51.54	18 58 4.9	11.4	4.3	0.30	Dec. 1	23 0.6	15 44 58.81	19 10 19.8	6.6	2.5	0.17
18	0 53.1	14 40 22.83	18 50 15.2	11.6	4.4	0.31	2	23 3.0	15 51 16.86	19 37 26.3	6.5	2.5	0.17
19	0 48.2	14 39 22.67	18 38 27.1	11.9	4.5	0.31	3	23 5.4	15 57 37.64	20 3 42.7	6.4	2.5	0.17
20	0 42.7	14 37 50.10	18 22 27.5	12.1	4.6	0.32	4	23 7.8	16 4 1.03	20 29 6.4	6.4	2.4	0.17
21	0 36.7	14 35 44.85	18 2 5.6	12.4	4.7	0.33	5	23 10.3	16 10 26.97	20 53 35.0	6.3	2.4	0.17
22	0 30.1	14 33 7.47	17 37 16.3	12.6	4.8	0.33	6	23 12.8	16 16 55.39	21 17 6.3	6.3	2.4	0.17
23	0 23.1	14 29 59.64	17 8 0.8	12.7	4.9	0.33	7	23 15.4	16 23 26.22	21 39 38.3	6.3	2.4	0.17
24	0 15.6	14 26 24.30	16 34 30.4	12.8	4.9	0.33	8	23 18.0	16 29 59.43	22 1 8.9	6.2	2.4	0.17
25	0 7.7	14 22 25.72	15 57 7.0	12.9	4.9	0.34	9	23 20.6	16 36 34.95	22 21 36.0	6.2	2.4	0.17
26	23 59.5	14 18 9.53	15 16 25.9	13.0	5.0	0.34	10	23 23.3	16 43 12.75	22 40 58.0	6.2	2.4	0.17
27	23 51.1	14 13 42.62	14 33 15.2	13.1	5.0	0.34	11	23 26.0	16 49 52.75	22 59 13.4	6.2	2.4	0.17
28	23 42.7	14 9 12.77	13 48 34.9	13.0	5.0	0.34	12	23 28.8	16 56 34.95	23 16 20.4	6.2	2.4	0.17
29	23 34.4	14 4 48.26	13 3 34.6	12.8	4.9	0.33	13	23 31.6	17 3 19.30	23 32 17.5	6.1	2.4	0.17
30	23 26.3	14 0 37.41	12 19 28.5	12.7	4.9	0.33	14	23 34.4	17 10 5.77	23 47 3.1	6.1	2.3	0.17
Nov. 1	23 18.6	13 56 48.00	11 37 30.8	12.6	4.8	0.32	15	23 37.2	17 16 54.24	24 0 35.4	6.1	2.3	0.17
2	23 11.3	13 53 26.87	10 58 49.4	12.4	4.7	0.32	16	23 40.1	17 23 44.72	24 12 53.3	6.1	2.3	0.17
3	23 4.6	13 50 39.63	10 24 23.4	12.1	4.6	0.31	17	23 43.0	17 30 37.12	24 23 55.3	6.1	2.3	0.17
4	22 58.5	13 48 30.18	9 54 57.8	11.8	4.5	0.31	18	23 46.0	17 37 31.38	24 33 40.0	6.1	2.3	0.17
5	22 53.1	13 47 1.00	9 31 2.8	11.5	4.4	0.30	19	23 49.0	17 44 27.40	24 42 5.9	6.1	2.3	0.17
6	22 48.4	13 46 13.08	9 12 54.8	11.2	4.3	0.29	20	23 52.0	17 51 25.12	24 49 11.6	6.1	2.3	0.17
7	22 44.3	13 46 6.17	9 0 36.7	10.9	4.2	0.28	21	23 55.0	17 58 24.50	24 54 56.0	6.1	2.3	0.17
8	22 40.9	13 46 38.95	8 54 0.6	10.6	4.1	0.27	22	23 58.1	18 5 25.38	24 59 17.8	6.1	2.3	0.17
9	22 38.2	13 47 49.32	8 52 49.6	10.3	3.9	0.27	23	0 1.2	18 12 27.71	25 2 15.6	6.1	2.3	0.17
10	22 36.0	13 49 34.63	8 56 41.0	10.0	3.8	0.26	24	0 4.3	18 19 31.38	25 3 48.3	6.1	2.3	0.17
11	22 34.3	13 51 52.11	9 5 8.4	9.7	3.7	0.25	25	0 7.4	18 26 36.25	25 3 54.5	6.1	2.3	0.17
12	22 33.2	13 54 38.70	9 17 43.3	9.4	3.5	0.24	26	0 10.5	18 33 42.18	25 2 33.1	6.1	2.3	0.17
13	22 32.4	13 57 51.39	9 33 56.5	9.2	3.4	0.24	27	0 13.7	18 40 49.05	24 59 43.1	6.1	2.3	0.17
14	22 32.1	14 1 27.32	9 53 19.7	8.9	3.3	0.23	28	0 16.9	18 47 56.71	24 55 23.4	6.2	2.3	0.17
15	22 32.1	14 5 23.77	10 15 26.1	8.7	3.2	0.22	29	0 20.1	18 55 4.98	24 49 33.0	6.2	2.4	0.17
16	22 32.4	14 9 38.31	10 39 50.4	8.4	3.1	0.22	30	0 23.3	19 2 13.71	24 42 11.0	6.2	2.4	0.17
17	22 32.9	14 14 8.74	11 6 9.1	8.2	3.1	0.21	31	0 26.5	19 9 22.71	24 33 16.8	6.2	2.4	0.17

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	Sid. T. of S.D. Pass. Mer.
	h m s	h m s	° ' "	"	"	s		h m s	h m s	° ' "	"	"	s
Jan. 0	1 57.0	20 33 14.26	-20 32 26.8	6.0	5.9	0.42	Feb. 15	2 30.9	0 8 36.13	+ 0 11 40.6	7.2	7.0	0.47
1	1 58.2	20 38 22.91	20 14 10.6	6.1	5.9	0.42	16	2 31.3	0 12 56.99	0 43 13.6	7.2	7.0	0.47
2	1 59.4	20 43 30.21	19 55 19.7	6.1	5.9	0.42	17	2 31.7	0 17 17.54	1 14 46.1	7.3	7.1	0.48
3	2 0.6	20 48 36.15	19 35 54.8	6.1	6.0	0.42	18	2 32.1	0 21 37.83	1 46 17.3	7.3	7.1	0.48
4	2 1.7	20 53 40.71	19 15 56.5	6.1	6.0	0.42	19	2 32.5	0 25 57.88	2 17 46.5	7.4	7.2	0.48
5	2 2.8	20 58 43.89	-18 55 25.7	6.1	6.0	0.42	20	2 32.9	0 30 17.75	+ 2 49 13.1	7.4	7.2	0.48
6	2 3.9	21 3 45.68	18 34 23.1	6.1	6.0	0.42	21	2 33.3	0 34 37.46	3 20 36.2	7.4	7.2	0.48
7	2 4.9	21 8 46.08	18 12 49.5	6.1	6.0	0.42	22	2 33.7	0 38 57.06	3 51 55.2	7.5	7.3	0.48
8	2 5.9	21 13 45.07	17 50 45.6	6.1	6.0	0.42	23	2 34.1	0 43 16.57	4 23 9.3	7.5	7.3	0.49
9	2 6.9	21 18 42.65	17 28 12.2	6.2	6.1	0.42	24	2 34.5	0 47 36.04	4 54 17.9	7.6	7.4	0.49
10	2 7.9	21 23 38.81	-17 5 10.2	6.2	6.1	0.42	25	2 34.8	0 51 55.49	+ 5 25 20.2	7.6	7.4	0.49
11	2 8.9	21 28 33.57	16 41 40.4	6.2	6.1	0.42	26	2 35.2	0 56 14.98	5 56 15.8	7.6	7.4	0.50
12	2 9.8	21 33 26.92	16 17 43.5	6.3	6.1	0.42	27	2 35.6	1 0 34.53	6 27 3.9	7.7	7.5	0.50
13	2 10.7	21 38 18.89	15 53 20.2	6.3	6.1	0.42	28	2 36.0	1 4 54.17	6 57 43.9	7.7	7.5	0.50
14	2 11.6	21 43 9.48	15 28 31.4	6.3	6.1	0.42	29	2 36.4	1 9 13.94	7 28 15.1	7.8	7.6	0.51
15	2 12.5	21 47 58.72	-15 3 17.8	6.3	6.2	0.43	Mar. 1	2 36.7	1 13 33.88	+ 7 58 36.7	7.8	7.6	0.51
16	2 13.4	21 52 46.60	14 37 40.4	6.3	6.2	0.43	2	2 37.1	1 17 53.99	8 28 47.9	7.8	7.6	0.51
17	2 14.2	21 57 33.16	14 11 39.9	6.4	6.2	0.43	3	2 37.5	1 22 14.31	8 58 48.1	7.9	7.7	0.52
18	2 15.0	22 2 18.41	13 45 17.1	6.4	6.2	0.43	4	2 37.9	1 26 34.86	9 28 36.5	7.9	7.7	0.52
19	2 15.8	22 7 2.38	13 18 32.9	6.4	6.2	0.43	5	2 38.3	1 30 55.67	9 58 12.4	8.0	7.8	0.52
20	2 16.6	22 11 45.10	-12 51 27.9	6.4	6.3	0.43	6	2 38.7	1 35 16.76	+ 10 27 35.1	8.0	7.8	0.53
21	2 17.3	22 16 26.59	12 24 2.8	6.5	6.3	0.43	7	2 39.1	1 39 38.14	10 56 43.9	8.0	7.9	0.53
22	2 18.0	22 21 6.88	11 56 18.3	6.5	6.3	0.43	8	2 39.5	1 43 59.83	11 25 38.1	8.1	7.9	0.53
23	2 18.7	22 25 45.99	11 28 15.5	6.5	6.3	0.43	9	2 39.9	1 48 21.85	11 54 17.1	8.1	8.0	0.54
24	2 19.4	22 30 23.95	10 59 55.2	6.6	6.3	0.43	10	2 40.3	1 52 44.22	12 22 40.1	8.2	8.0	0.54
25	2 20.1	22 35 0.79	-10 31 18.2	6.6	6.4	0.43	11	2 40.8	1 57 6.95	+ 12 50 46.4	8.3	8.1	0.55
26	2 20.8	22 39 36.55	10 2 25.4	6.6	6.4	0.43	12	2 41.2	2 1 30.05	13 18 35.4	8.3	8.1	0.55
27	2 21.4	22 44 11.27	9 33 17.3	6.6	6.4	0.43	13	2 41.6	2 5 53.55	13 46 6.4	8.4	8.2	0.56
28	2 22.0	22 48 44.97	9 3 54.6	6.6	6.4	0.43	14	2 42.1	2 10 17.48	14 13 18.8	8.4	8.2	0.56
29	2 22.6	22 53 17.68	8 34 18.0	6.7	6.5	0.43	15	2 42.6	2 14 41.82	14 40 11.8	8.5	8.3	0.57
30	2 23.2	22 57 49.46	-8 4 28.4	6.7	6.5	0.43	16	2 43.1	2 19 6.59	+ 15 6 44.6	8.6	8.3	0.58
31	2 23.8	23 2 20.31	7 34 26.6	6.7	6.5	0.43	17	2 43.6	2 23 31.79	15 32 56.8	8.7	8.4	0.58
Feb. 1	2 24.4	23 6 50.28	7 4 13.4	6.7	6.6	0.43	18	2 44.1	2 27 57.45	15 58 47.7	8.7	8.4	0.59
2	2 25.0	23 11 19.40	6 33 49.6	6.8	6.6	0.44	19	2 44.6	2 32 23.56	16 24 16.6	8.8	8.5	0.59
3	2 25.5	23 15 47.70	6 3 15.9	6.8	6.6	0.44	20	2 45.1	2 36 50.13	16 49 23.1	8.8	8.5	0.60
4	2 26.0	23 20 15.21	-5 32 33.1	6.8	6.7	0.44	21	2 45.7	2 41 17.15	+ 17 14 6.3	8.9	8.6	0.60
5	2 26.5	23 24 41.98	5 1 42.0	6.9	6.7	0.45	22	2 46.2	2 45 44.63	17 38 25.6	9.0	8.7	0.61
6	2 27.0	23 29 8.03	4 30 43.3	6.9	6.7	0.45	23	2 46.7	2 50 12.55	18 2 20.6	9.0	8.7	0.61
7	2 27.5	23 33 33.39	3 59 37.8	6.9	6.7	0.45	24	2 47.2	2 54 40.93	18 25 50.6	9.1	8.8	0.62
8	2 28.0	23 37 58.11	3 28 26.2	7.0	6.8	0.46	25	2 47.7	2 59 9.75	18 48 55.0	9.1	8.9	0.63
9	2 28.4	23 42 22.23	-2 57 9.3	7.0	6.8	0.46	26	2 48.2	3 3 39.02	+ 19 11 33.2	9.2	9.0	0.63
10	2 28.8	23 46 45.77	2 25 47.9	7.0	6.8	0.46	27	2 48.7	3 8 8.72	19 33 44.8	9.3	9.0	0.64
11	2 29.3	23 51 8.77	1 54 22.8	7.1	6.8	0.46	28	2 49.2	3 12 38.82	19 55 29.2	9.3	9.1	0.64
12	2 29.7	23 55 31.27	1 22 54.7	7.1	6.9	0.46	29	2 49.8	3 17 9.32	20 16 45.8	9.4	9.1	0.65
13	2 30.1	23 59 53.31	0 51 24.2	7.1	6.9	0.47	30	2 50.4	3 21 40.20	20 37 34.0	9.5	9.2	0.65
14	2 30.5	0 4 14.02	-0 19 52.2	7.2	7.0	0.47	31	2 51.0	3 26 11.42	+ 20 57 53.4	9.6	9.3	0.66
15	2 30.9	0 8 36.13	+ 0 11 40.6	7.2	7.0	0.47	Apr. 1	2 51.6	3 30 42.03	+ 21 17 43.3	9.7	9.4	0.66

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Apr. 1	2 51.6	3 30 42.93	+21 17 43.3	9.7	9.4	0.66	May 17	3 3.9	6 44 30.65	+26 32 27.5	16.1	15.6	1.16
2	2 52.2	3 35 14.70	21 37 3.5	9.8	9.5	0.67	18	3 3.2	6 47 45.44	26 27 4.5	16.3	15.8	1.18
3	2 52.8	3 39 46.71	21 55 53.4	9.9	9.5	0.67	19	3 2.5	6 50 55.54	26 21 18.2	16.6	16.0	1.19
4	2 53.4	3 44 18.92	22 14 12.5	9.9	9.6	0.68	20	3 1.7	6 54 0.79	26 15 9.6	16.8	16.3	1.21
5	2 54.0	3 48 51.29	22 32 0.2	10.0	9.7	0.69	21	3 0.7	6 57 1.00	26 8 39.4	17.0	16.5	1.23
6	2 54.6	3 53 23.73	+22 49 16.1	10.1	9.8	0.69	22	2 59.7	6 59 55.99	+26 1 48.6	17.3	16.7	1.24
7	2 55.2	3 57 56.19	23 5 59.8	10.2	9.9	0.70	23	2 58.6	7 2 45.59	25 54 37.9	17.5	17.0	1.26
8	2 55.8	4 2 28.63	23 22 10.8	10.3	10.0	0.70	24	2 57.4	7 5 29.61	25 47 8.2	17.8	17.3	1.27
9	2 56.4	4 7 1.00	23 37 48.9	10.4	10.1	0.71	25	2 56.1	7 8 7.85	25 39 20.7	18.1	17.6	1.29
10	2 57.0	4 11 33.24	23 52 53.7	10.5	10.2	0.72	26	2 54.7	7 10 40.12	25 31 16.1	18.4	17.8	1.31
11	2 57.5	4 16 5.28	+24 7 24.9	10.6	10.3	0.73	27	2 53.2	7 13 6.23	+25 22 55.2	18.7	18.1	1.33
12	2 58.1	4 20 37.06	24 21 22.1	10.7	10.4	0.74	28	2 51.6	7 15 25.95	25 14 19.0	19.0	18.4	1.35
13	2 58.7	4 25 8.51	24 34 44.9	10.8	10.5	0.75	29	2 49.9	7 17 39.05	25 5 28.7	19.3	18.7	1.37
14	2 59.3	4 29 39.56	24 47 33.2	10.9	10.6	0.76	30	2 48.1	7 19 45.30	24 56 24.9	19.6	19.0	1.39
15	2 59.9	4 34 10.13	24 59 47.0	11.0	10.7	0.77	31	2 46.2	7 21 44.47	24 47 8.7	19.9	19.3	1.41
16	3 0.5	4 38 40.14	+25 11 26.1	11.1	10.8	0.78	June 1	2 44.1	7 23 36.34	+24 37 41.1	20.2	19.6	1.43
17	3 1.0	4 43 9.52	25 22 30.1	11.2	10.9	0.79	2	2 41.9	7 25 20.67	24 28 2.9	20.5	19.9	1.45
18	3 1.5	4 47 38.18	25 32 58.9	11.3	11.0	0.80	3	2 39.5	7 26 57.22	24 18 15.1	20.8	20.2	1.47
19	3 2.0	4 52 6.04	25 42 52.5	11.4	11.1	0.81	4	2 37.0	7 28 25.74	24 8 18.9	21.2	20.5	1.49
20	3 2.5	4 56 33.01	25 52 10.8	11.5	11.2	0.83	5	2 34.4	7 29 45.99	23 58 14.8	21.5	20.8	1.51
21	3 3.0	5 0 59.01	+26 0 53.9	11.6	11.3	0.84	6	2 31.7	7 30 57.71	+23 48 3.8	21.9	21.2	1.53
22	3 3.5	5 5 23.96	26 9 1.7	11.8	11.4	0.85	7	2 28.8	7 32 0.66	23 37 46.5	22.2	21.5	1.56
23	3 4.0	5 9 47.76	26 16 34.3	11.9	11.5	0.86	8	2 25.8	7 32 54.61	23 27 23.9	22.6	21.9	1.58
24	3 4.4	5 14 10.31	26 23 31.8	12.1	11.6	0.87	9	2 22.6	7 33 39.33	23 16 56.9	23.0	22.3	1.61
25	3 4.8	5 18 31.55	26 29 54.2	12.2	11.8	0.88	10	2 19.2	7 34 14.62	23 6 26.4	23.4	22.6	1.64
26	3 5.2	5 22 51.35	+26 35 41.8	12.3	11.9	0.89	11	2 15.7	7 34 40.28	+22 55 52.9	23.7	23.0	1.66
27	3 5.5	5 27 9.59	26 40 54.6	12.5	12.1	0.90	12	2 12.0	7 34 56.12	22 45 17.2	24.1	23.4	1.69
28	3 5.8	5 31 26.16	26 45 32.9	12.6	12.2	0.91	13	2 8.2	7 35 1.98	22 34 40.1	24.5	23.8	1.71
29	3 6.1	5 35 40.94	26 49 36.9	12.8	12.4	0.92	14	2 4.2	7 34 57.73	22 24 2.0	24.9	24.2	1.74
30	3 6.4	5 39 53.81	26 53 6.9	12.9	12.5	0.93	15	2 0.1	7 34 43.27	22 13 23.5	25.2	24.5	1.76
May 1	3 6.6	5 44 4.67	+26 56 3.1	13.1	12.7	0.94	16	1 55.8	7 34 18.54	+22 2 45.0	25.6	24.9	1.79
2	3 6.8	5 48 13.38	26 58 25.8	13.2	12.8	0.95	17	1 51.3	7 33 43.51	21 52 7.0	26.0	25.3	1.82
3	3 7.0	5 52 19.81	27 0 15.4	13.4	13.0	0.96	18	1 46.6	7 32 58.19	21 41 30.2	26.4	25.7	1.84
4	3 7.1	5 56 23.82	27 1 32.3	13.5	13.1	0.97	19	1 41.7	7 32 2.65	21 30 54.9	26.8	26.1	1.86
5	3 7.2	6 0 25.28	27 2 16.7	13.7	13.3	0.99	20	1 36.7	7 30 57.00	21 20 21.5	27.1	26.4	1.88
6	3 7.2	6 4 24.05	+27 2 29.3	13.8	13.4	1.00	21	1 31.5	7 29 41.42	+21 9 50.4	27.5	26.7	1.90
7	3 7.1	6 8 19.98	27 2 10.5	14.0	13.6	1.02	22	1 26.2	7 28 16.12	20 59 22.0	27.8	27.0	1.92
8	3 7.1	6 12 12.94	27 1 21.0	14.2	13.8	1.03	23	1 20.7	7 26 41.40	20 48 56.6	28.1	27.3	1.94
9	3 7.0	6 16 2.78	27 0 1.3	14.4	14.0	1.04	24	1 15.0	7 24 57.60	20 38 34.6	28.4	27.6	1.96
10	3 7.0	6 19 49.35	26 58 11.8	14.6	14.2	1.06	25	1 9.2	7 23 5.12	20 28 16.6	28.7	27.8	1.98
11	3 6.8	6 23 32.50	+26 55 53.1	14.8	14.4	1.07	26	1 3.3	7 21 4.45	+20 18 3.1	28.9	28.1	2.00
12	3 6.6	6 27 12.07	26 53 6.0	15.0	14.6	1.09	27	0 57.3	7 18 56.10	20 7 54.7	29.2	28.3	2.02
13	3 6.3	6 30 47.91	26 49 51.1	15.2	14.8	1.11	28	0 51.1	7 16 40.74	19 57 52.0	29.5	28.6	2.04
14	3 6.8	6 34 19.83	26 46 9.1	15.4	15.0	1.12	29	0 44.7	7 14 19.07	19 47 55.9	29.7	28.9	2.05
15	3 5.2	6 37 47.68	26 42 0.6	15.6	15.2	1.13	30	0 38.3	7 11 51.82	19 38 7.1	29.9	29.0	2.06
16	3 4.6	6 41 11.34	+26 37 26.5	15.8	15.4	1.14	July 1	0 31.8	7 9 19.86	+19 28 26.6	30.1	29.1	2.07
17	3 3.9	6 44 30.65	+26 32 27.5	16.1	15.6	1.16	2	0 25.3	7 6 43.99	+19 18 55.4	30.2	29.2	2.07

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
July 1	0 31.8	7 9 19.86	+19 28 26.6	30.1	29.1	2.07	Aug. 15	21 11.0	6 49 26.61	+17 49 54.4	18.2	17.7	1.25
2	0 25.3	7 6 43.99	19 18 55.4	30.2	29.2	2.07	16	21 9.7	6 51 59.18	17 51 54.7	17.9	17.4	1.23
3	0 18.7	7 4 5.18	19 9 34.9	30.3	29.3	2.08	17	21 8.5	6 54 36.97	17 53 44.9	17.7	17.2	1.21
4	0 12.1	7 1 24.39	19 0 26.4	30.3	29.4	2.08	18	21 7.3	6 57 19.77	17 55 23.8	17.4	17.0	1.19
5	0 5.5	6 58 42.59	18 51 31.1	30.3	29.4	2.07	19	21 6.2	7 0 7.40	17 56 50.2	17.2	16.7	1.18
5	23 58.9	6 56 0.74	+18 42 50.4	30.3	29.4	2.07	20	21 5.1	7 2 59.66	+17 58 3.1	16.9	16.5	1.16
6	23 52.3	6 53 19.84	18 34 26.1	30.2	29.3	2.07	21	21 4.0	7 5 56.36	17 59 1.6	16.7	16.2	1.15
7	23 45.7	6 50 40.89	18 26 19.7	30.2	29.3	2.06	22	21 3.1	7 8 57.33	17 59 44.4	16.5	16.0	1.13
8	23 39.2	6 48 4.85	18 18 32.8	30.2	29.3	2.06	23	21 2.2	7 12 2.40	18 0 10.7	16.2	15.8	1.12
9	23 32.8	6 45 32.64	18 11 6.7	30.0	29.2	2.04	24	21 1.4	7 15 11.41	18 0 19.6	16.0	15.6	1.10
10	23 26.4	6 43 5.17	+18 4 2.7	29.8	29.0	2.02	25	21 0.7	7 18 24.21	+18 0 10.2	15.8	15.4	1.08
11	23 20.1	6 40 43.28	17 57 22.3	29.6	28.8	2.00	26	21 0.1	7 21 40.64	17 59 41.5	15.6	15.2	1.07
12	23 13.9	6 38 27.72	17 51 6.6	29.4	28.6	1.98	27	20 59.5	7 25 0.54	17 58 52.7	15.4	15.0	1.05
13	23 7.8	6 36 19.21	17 45 17.0	29.2	28.4	1.96	28	20 59.0	7 28 23.76	17 57 43.1	15.2	14.8	1.03
14	23 1.9	6 34 18.38	17 39 54.2	29.0	28.2	1.94	29	20 58.5	7 31 50.18	17 56 12.0	15.0	14.6	1.02
15	22 56.1	6 32 25.79	+17 34 58.9	28.7	27.9	1.93	30	20 58.0	7 35 19.66	+17 54 18.8	14.8	14.4	1.00
16	22 50.4	6 30 41.92	17 30 31.4	28.4	27.6	1.91	31	20 57.6	7 38 52.07	17 52 2.9	14.6	14.2	0.99
17	22 44.9	6 29 7.15	17 26 32.1	28.1	27.3	1.90	Sept. 1	20 57.2	7 42 27.27	17 49 23.5	14.4	14.0	0.98
18	22 39.6	6 27 41.81	17 23 1.4	27.8	27.0	1.88	2	20 56.9	7 46 5.15	17 46 20.2	14.2	13.9	0.96
19	22 34.4	6 26 26.17	17 19 58.9	27.4	26.6	1.86	3	20 56.6	7 49 45.61	17 42 52.4	14.0	13.8	0.95
20	22 29.4	6 25 20.37	+17 17 24.1	27.0	26.2	1.83	4	20 56.4	7 53 28.53	+17 38 59.6	13.9	13.6	0.94
21	22 24.6	6 24 24.52	17 15 16.5	26.7	25.9	1.81	5	20 56.2	7 57 13.82	17 34 41.4	13.7	13.4	0.93
22	22 19.9	6 23 38.68	17 13 35.5	26.3	25.5	1.78	6	20 56.0	8 1 1.37	17 29 57.4	13.6	13.2	0.92
23	22 15.3	6 23 2.87	17 12 20.2	26.0	25.2	1.76	7	20 56.0	8 4 51.07	17 24 47.2	13.4	13.1	0.91
24	22 10.9	6 22 37.04	17 11 29.7	25.6	24.8	1.74	8	20 55.9	8 8 42.83	17 19 10.3	13.2	12.9	0.90
25	22 6.7	6 22 21.12	+17 11 3.0	25.2	24.4	1.71	9	20 55.9	8 12 36.56	+17 13 6.5	13.1	12.8	0.89
26	22 2.7	6 22 14.98	17 10 58.7	24.8	24.1	1.69	10	20 55.8	8 16 32.17	17 6 35.3	12.9	12.6	0.88
27	21 58.8	6 22 18.49	17 11 15.8	24.4	23.7	1.66	11	20 55.8	8 20 29.57	16 59 36.6	12.8	12.5	0.87
28	21 55.1	6 22 31.52	17 11 52.5	24.1	23.4	1.64	12	20 55.9	8 24 28.67	16 52 10.2	12.7	12.3	0.86
29	21 51.6	6 22 53.88	17 12 47.5	23.7	23.0	1.61	13	20 56.0	8 28 29.37	16 44 15.8	12.6	12.2	0.85
30	21 48.2	6 23 25.34	+17 13 59.3	23.3	22.7	1.58	14	20 56.0	8 32 31.59	+16 35 53.2	12.5	12.0	0.84
31	21 44.9	6 24 5.68	17 15 26.4	23.0	22.3	1.56	15	20 56.2	8 36 35.24	16 27 2.4	12.3	11.9	0.83
Aug. 1	21 41.8	6 24 54.67	17 17 7.2	22.6	22.0	1.54	16	20 56.3	8 40 40.23	16 17 43.3	12.2	11.8	0.82
2	21 38.8	6 25 52.10	17 19 0.1	22.3	21.7	1.52	17	20 56.4	8 44 46.49	16 7 55.8	12.0	11.6	0.81
3	21 35.9	6 26 57.77	17 21 3.4	22.0	21.3	1.49	18	20 56.6	8 48 53.94	15 57 40.0	11.9	11.5	0.80
4	21 33.2	6 28 11.47	+17 23 15.6	21.6	21.0	1.47	19	20 56.8	8 53 2.50	+15 46 55.8	11.7	11.4	0.79
5	21 30.6	6 29 32.95	17 25 35.2	21.3	20.7	1.45	20	20 57.0	8 57 12.10	15 35 43.2	11.6	11.3	0.79
6	21 28.2	6 31 1.98	17 28 0.4	20.9	20.3	1.43	21	20 57.2	9 1 22.67	15 24 2.3	11.5	11.2	0.78
7	21 25.9	6 32 38.33	17 30 29.9	20.6	20.0	1.41	22	20 57.4	9 5 34.14	15 11 53.4	11.4	11.1	0.77
8	21 23.7	6 34 21.77	17 33 2.0	20.3	19.8	1.39	23	20 57.7	9 9 46.45	14 59 16.5	11.3	11.0	0.76
9	21 21.6	6 36 12.08	+17 35 35.2	20.0	19.5	1.37	24	20 58.0	9 13 59.52	+14 46 11.8	11.2	10.9	0.75
10	21 19.6	6 38 9.06	17 38 7.9	19.7	19.2	1.35	25	20 58.3	9 18 13.31	14 32 39.4	11.1	10.8	0.74
11	21 17.7	6 40 12.40	17 40 38.7	19.4	18.9	1.33	26	20 58.6	9 22 27.77	14 18 39.7	11.0	10.7	0.74
12	21 15.9	6 42 22.18	17 43 6.1	19.1	18.6	1.31	27	20 58.9	9 26 42.82	14 4 12.7	10.9	10.6	0.73
13	21 14.1	6 44 37.90	17 45 28.7	18.8	18.3	1.29	28	20 59.2	9 30 58.44	13 49 18.7	10.8	10.5	0.72
14	21 12.5	6 46 59.45	+17 47 45.3	18.5	18.0	1.27	29	20 59.5	9 35 14.57	+13 33 58.2	10.7	10.4	0.71
15	21 11.0	6 49 20.61	+17 49 54.4	18.2	17.7	1.25	30	20 59.8	9 39 31.18	+13 18 11.3	10.6	10.3	0.70

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid.T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid.T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Oct. 1	21 0.2	9 43 48.22	+13 1 58.3	10.5	10.2	0.70	Nov. 16	21 20.0	13 4 59.50	-4 53 35.0	7.6	7.4	0.50
2	21 0.5	9 48 5.67	12 45 19.5	10.5	10.2	0.70	17	21 20.6	13 9 29.62	5 20 16.7	7.5	7.3	0.49
3	21 0.9	9 52 23.49	12 28 15.5	10.4	10.1	0.69	18	21 21.2	13 14 0.38	5 46 55.6	7.5	7.3	0.49
4	21 1.2	9 56 41.64	12 10 46.4	10.3	10.0	0.69	19	21 21.8	13 18 31.82	6 13 31.0	7.5	7.2	0.48
5	21 1.6	10 1 0.09	11 52 52.7	10.2	9.9	0.68	20	21 22.3	13 23 3.96	6 40 2.2	7.4	7.2	0.48
6	21 2.0	10 5 18.84	+11 34 34.6	10.1	9.8	0.67	21	21 22.9	13 27 36.84	-7 6 28.4	7.4	7.2	0.48
7	21 2.3	10 9 37.86	11 15 52.6	10.0	9.7	0.67	22	21 23.5	13 32 10.48	7 32 48.7	7.3	7.1	0.48
8	21 2.7	10 13 57.14	10 56 47.2	9.9	9.6	0.66	23	21 24.1	13 36 44.86	7 59 2.3	7.3	7.1	0.47
9	21 3.1	10 18 16.64	10 37 18.7	9.8	9.5	0.66	24	21 24.8	13 41 20.05	8 25 8.4	7.2	7.0	0.47
10	21 3.5	10 22 36.37	10 17 27.7	9.7	9.5	0.65	25	21 25.5	13 45 56.06	8 51 6.3	7.2	7.0	0.47
11	21 3.9	10 26 56.30	+9 57 14.5	9.7	9.4	0.64	26	21 26.2	13 50 32.93	-9 16 55.2	7.2	7.0	0.47
12	21 4.3	10 31 16.43	9 36 39.6	9.6	9.3	0.63	27	21 26.9	13 55 10.67	9 42 34.3	7.2	6.9	0.47
13	21 4.7	10 35 36.73	9 15 43.5	9.5	9.2	0.62	28	21 27.6	13 59 49.32	10 8 2.7	7.1	6.9	0.47
14	21 5.1	10 39 57.19	8 54 26.7	9.4	9.2	0.62	29	21 28.3	14 4 28.89	10 33 19.6	7.1	6.8	0.47
15	21 5.5	10 44 17.80	8 32 49.9	9.3	9.1	0.61	30	21 29.0	14 9 9.41	10 58 24.3	7.1	6.8	0.47
16	21 5.9	10 48 38.55	+8 10 53.6	9.3	9.0	0.61	Dec. 1	21 29.7	14 13 50.90	-11 23 16.1	7.1	6.8	0.46
17	21 6.3	10 52 59.44	7 48 38.2	9.2	8.9	0.60	2	21 30.5	14 18 33.39	11 47 54.1	7.0	6.8	0.46
18	21 6.7	10 57 20.45	7 26 4.4	9.1	8.9	0.60	3	21 31.3	14 23 16.91	12 12 17.7	7.0	6.7	0.46
19	21 7.1	11 1 41.59	7 3 12.8	9.0	8.8	0.59	4	21 32.1	14 28 1.47	12 36 25.9	6.9	6.7	0.46
20	21 7.5	11 6 2.85	6 40 4.0	8.9	8.8	0.59	5	21 32.9	14 32 47.09	13 0 18.1	6.9	6.7	0.46
21	21 8.0	11 10 24.22	+6 16 38.6	8.9	8.7	0.58	6	21 33.7	14 37 33.81	-13 23 53.4	6.9	6.7	0.46
22	21 8.4	11 14 45.71	5 52 57.3	8.8	8.6	0.58	7	21 34.5	14 42 21.64	13 47 10.9	6.9	6.6	0.46
23	21 8.8	11 19 7.32	5 29 0.7	8.7	8.6	0.57	8	21 35.4	14 47 10.61	14 10 10.0	6.8	6.6	0.46
24	21 9.2	11 23 29.05	5 4 49.4	8.6	8.5	0.57	9	21 36.3	14 52 0.73	14 32 49.7	6.8	6.5	0.46
25	21 9.6	11 27 50.92	4 40 24.1	8.6	8.5	0.56	10	21 37.2	14 56 52.01	14 55 9.3	6.8	6.5	0.46
26	21 10.1	11 32 12.94	+4 15 45.3	8.6	8.4	0.56	11	21 38.1	15 1 44.48	-15 17 8.1	6.8	6.5	0.45
27	21 10.5	11 36 35.10	3 50 53.6	8.6	8.4	0.56	12	21 39.1	15 6 38.12	15 38 45.3	6.7	6.5	0.45
28	21 10.9	11 40 57.43	3 25 49.9	8.5	8.3	0.55	13	21 40.1	15 11 32.96	16 0 0.1	6.7	6.4	0.45
29	21 11.3	11 45 19.94	3 0 34.9	8.5	8.2	0.55	14	21 41.1	15 16 28.99	16 20 51.6	6.6	6.4	0.45
30	21 11.7	11 49 42.64	2 35 9.3	8.4	8.2	0.54	15	21 42.1	15 21 26.21	16 41 19.1	6.6	6.4	0.45
31	21 12.2	11 54 5.54	+2 9 33.6	8.4	8.1	0.54	16	21 43.1	15 26 24.65	-17 1 21.8	6.6	6.4	0.45
Nov. 1	21 12.6	11 58 28.68	1 43 48.5	8.3	8.1	0.54	17	21 44.1	15 31 24.29	17 20 58.9	6.6	6.4	0.45
2	21 13.0	12 2 52.07	1 17 54.7	8.2	8.0	0.53	18	21 45.2	15 36 25.14	17 40 9.5	6.5	6.3	0.45
3	21 13.5	12 7 15.72	0 51 52.9	8.2	8.0	0.53	19	21 46.3	15 41 27.18	17 58 52.9	6.5	6.3	0.45
4	21 14.0	12 11 39.68	+0 25 43.5	8.1	7.9	0.52	20	21 47.4	15 46 30.42	18 17 8.4	6.5	6.3	0.45
5	21 14.5	12 16 3.96	-0 0 32.8	8.1	7.9	0.52	21	21 48.5	15 51 34.82	-18 34 55.2	6.5	6.3	0.44
6	21 14.9	12 20 28.59	0 26 55.0	8.0	7.8	0.52	22	21 49.6	15 56 40.40	18 52 12.6	6.5	6.3	0.44
7	21 15.4	12 24 53.59	0 53 22.5	8.0	7.8	0.52	23	21 50.8	16 1 47.13	19 8 59.8	6.4	6.2	0.44
8	21 15.9	12 29 18.98	1 19 54.8	7.9	7.7	0.51	24	21 52.0	16 6 55.00	19 25 16.0	6.4	6.2	0.44
9	21 16.4	12 33 44.79	1 46 31.0	7.8	7.7	0.51	25	21 53.2	16 12 3.97	19 41 0.7	6.4	6.2	0.44
10	21 16.9	12 38 11.05	-2 13 10.5	7.8	7.6	0.51	26	21 54.4	16 17 14.05	-19 56 13.1	6.4	6.2	0.44
11	21 17.4	12 42 37.79	2 39 52.4	7.8	7.6	0.51	27	21 55.6	16 22 25.21	20 10 52.5	6.4	6.2	0.44
12	21 17.9	12 47 5.03	3 6 36.2	7.7	7.5	0.51	28	21 56.9	16 27 37.42	20 24 58.3	6.3	6.1	0.43
13	21 18.4	12 51 32.80	3 33 21.1	7.7	7.5	0.50	29	21 58.2	16 32 50.65	20 38 29.8	6.3	6.1	0.43
14	21 18.9	12 56 1.12	4 0 6.4	7.6	7.4	0.50	30	21 59.5	16 38 4.88	20 51 26.4	6.3	6.1	0.43
15	21 19.5	13 0 30.01	-4 26 51.3	7.6	7.4	0.50	31	22 0.8	16 43 20.08	-21 3 47.7	6.2	6.0	0.43
16	21 20.0	13 4 59.50	-4 53 35.0	7.6	7.4	0.50	32	22 2.2	16 48 36.22	-21 15 33.0	6.2	6.0	0.43

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Jan. 0	14 20.6	8 58 53.10	+17 51 51.5	2.0	21.2	1.57	Feb. 15	10 56.8	8 35 55.42	+19 28 6.5	2.0	21.6	1.62
1	14 16.3	8 58 29.95	17 53 40.1	2.0	21.2	1.58	16	10 52.4	8 35 26.49	19 29 55.5	2.0	21.6	1.62
2	14 12.0	8 58 6.21	17 55 30.8	2.0	21.2	1.58	17	10 48.0	8 34 57.96	19 31 42.7	2.0	21.5	1.62
3	14 7.6	8 57 41.88	17 57 23.6	2.0	21.3	1.59	18	10 43.7	8 34 29.84	19 33 27.8	2.0	21.5	1.62
4	14 3.3	8 57 16.98	17 59 18.5	2.0	21.3	1.59	19	10 39.3	8 34 2.16	19 35 10.8	2.0	21.5	1.62
5	13 59.0	8 56 51.54	+18 1 15.3	2.0	21.3	1.59	20	10 34.9	8 33 34.94	+19 36 51.6	2.0	21.5	1.62
6	13 54.6	8 56 25.57	18 3 13.9	2.0	21.4	1.60	21	10 30.6	8 33 8.21	19 38 30.1	2.0	21.4	1.61
7	13 50.2	8 55 59.10	18 5 14.2	2.0	21.4	1.60	22	10 26.2	8 32 41.97	19 40 6.4	2.0	21.4	1.61
8	13 45.8	8 55 32.14	18 7 16.2	2.0	21.5	1.61	23	10 21.8	8 32 16.24	19 41 40.3	2.0	21.3	1.61
9	13 41.4	8 55 4.70	18 9 19.6	2.0	21.5	1.61	24	10 17.5	8 31 51.05	19 43 11.9	2.0	21.3	1.61
10	13 37.0	8 54 36.82	+18 11 24.3	2.0	21.5	1.61	25	10 13.1	8 31 26.42	+19 44 41.1	2.0	21.2	1.60
11	13 32.6	8 54 8.51	18 13 30.3	2.0	21.5	1.61	26	10 8.7	8 31 2.35	19 46 7.9	2.0	21.2	1.60
12	13 28.2	8 53 39.78	18 15 37.7	2.0	21.6	1.62	27	10 4.4	8 30 38.85	19 47 32.3	2.0	21.1	1.60
13	13 23.8	8 53 10.68	18 17 46.2	2.0	21.6	1.62	28	10 0.1	8 30 15.95	19 48 54.3	2.0	21.1	1.59
14	13 19.4	8 52 41.19	18 19 55.6	2.0	21.6	1.62	29	9 55.8	8 29 53.65	19 50 13.7	2.0	21.0	1.59
15	13 15.0	8 52 11.35	+18 22 5.9	2.0	21.7	1.63	Mar. 1	9 51.5	8 29 31.98	+19 51 30.5	2.0	21.0	1.58
16	13 10.6	8 51 41.18	18 24 17.1	2.0	21.7	1.63	2	9 47.2	8 29 10.96	19 52 44.7	2.0	20.9	1.58
17	13 6.1	8 51 10.70	18 26 29.0	2.0	21.7	1.63	3	9 42.9	8 28 50.60	19 53 56.3	2.0	20.9	1.58
18	13 1.7	8 50 39.92	18 28 41.5	2.0	21.7	1.63	4	9 38.7	8 28 30.90	19 55 5.2	2.0	20.8	1.57
19	12 57.3	8 50 8.88	18 30 54.5	2.0	21.7	1.63	5	9 34.4	8 28 11.89	19 56 11.4	2.0	20.8	1.57
20	12 52.8	8 49 37.61	+18 33 8.0	2.0	21.7	1.63	6	9 30.2	8 27 53.57	+19 57 14.9	1.9	20.7	1.57
21	12 48.4	8 49 6.11	18 35 21.8	2.0	21.7	1.63	7	9 26.0	8 27 35.95	19 58 15.8	1.9	20.7	1.56
22	12 43.9	8 48 34.40	18 37 35.8	2.0	21.8	1.63	8	9 21.8	8 27 19.04	19 59 14.0	1.9	20.6	1.56
23	12 39.4	8 48 2.52	18 39 49.9	2.0	21.8	1.63	9	9 17.6	8 27 2.85	20 0 9.4	1.9	20.6	1.56
24	12 34.9	8 47 30.49	18 42 4.1	2.0	21.8	1.63	10	9 13.4	8 26 47.39	20 1 2.1	1.9	20.5	1.55
25	12 30.5	8 46 58.31	+18 44 18.1	2.0	21.8	1.63	11	9 9.2	8 26 32.67	+20 1 52.0	1.9	20.5	1.55
26	12 26.0	8 46 26.03	18 46 31.9	2.0	21.8	1.63	12	9 5.1	8 26 18.67	20 2 39.2	1.9	20.4	1.54
27	12 21.6	8 45 53.66	18 48 45.5	2.0	21.8	1.63	13	9 0.9	8 26 5.42	20 3 23.6	1.9	20.4	1.54
28	12 17.1	8 45 21.22	18 50 58.8	2.0	21.8	1.63	14	8 56.7	8 25 52.92	20 4 5.3	1.9	20.3	1.54
29	12 12.7	8 44 48.74	18 53 11.6	2.0	21.8	1.64	15	8 52.6	8 25 41.18	20 4 44.2	1.9	20.3	1.54
30	12 8.2	8 44 16.26	+18 55 23.7	2.0	21.8	1.64	16	8 48.5	8 25 30.20	+20 5 20.3	1.9	20.2	1.53
31	12 3.7	8 43 43.79	18 57 35.2	2.0	21.8	1.64	17	8 44.4	8 25 20.00	20 5 53.5	1.9	20.2	1.53
Feb. 1	11 59.2	8 43 11.37	18 59 46.0	2.0	21.8	1.64	18	8 40.3	8 25 10.57	20 6 23.9	1.9	20.1	1.53
2	11 54.7	8 42 39.02	19 1 56.0	2.0	21.8	1.64	19	8 36.2	8 25 1.90	20 6 51.7	1.9	20.1	1.52
3	11 50.3	8 42 6.75	19 4 4.9	2.0	21.8	1.64	20	8 32.2	8 24 54.01	20 7 16.7	1.9	20.0	1.52
4	11 45.8	8 41 34.59	+19 6 12.8	2.0	21.8	1.64	21	8 28.2	8 24 46.89	+20 7 38.9	1.9	20.0	1.51
5	11 41.3	8 41 2.57	19 8 19.5	2.0	21.8	1.64	22	8 24.2	8 24 40.55	20 7 58.4	1.9	19.9	1.51
6	11 36.8	8 40 30.72	19 10 25.0	2.0	21.8	1.64	23	8 20.1	8 24 34.99	20 8 15.1	1.9	19.9	1.50
7	11 32.4	8 39 59.07	19 12 29.1	2.0	21.8	1.63	24	8 16.1	8 24 30.21	20 8 29.0	1.9	19.8	1.50
8	11 27.9	8 39 27.63	19 14 31.9	2.0	21.7	1.63	25	8 12.1	8 24 26.22	20 8 40.2	1.9	19.7	1.50
9	11 23.5	8 38 56.44	+19 16 33.3	2.0	21.7	1.63	26	8 8.1	8 24 23.02	+20 8 48.6	1.8	19.7	1.49
10	11 19.0	8 38 25.50	19 18 33.1	2.0	21.7	1.63	27	8 4.2	8 24 20.61	20 8 54.2	1.8	19.6	1.49
11	11 14.6	8 37 54.83	19 20 31.3	2.0	21.7	1.63	28	8 0.2	8 24 18.99	20 8 57.2	1.8	19.5	1.48
12	11 10.2	8 37 24.47	19 22 27.7	2.0	21.7	1.63	29	7 56.2	8 24 18.15	20 8 57.4	1.8	19.5	1.48
13	11 5.7	8 36 54.43	19 24 22.5	2.0	21.7	1.63	30	7 52.3	8 24 18.10	20 8 54.8	1.8	19.4	1.48
14	11 1.3	8 36 24.74	+19 26 15.5	2.0	21.6	1.62	31	7 48.4	8 24 18.85	+20 8 49.5	1.8	19.4	1.47
15	10 56.8	8 35 55.42	+19 28 6.5	2.0	21.6	1.62	Apr. 1	7 44.5	8 24 20.38	+20 8 41.5	1.8	19.3	1.46

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi-diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Apr. 1	7 44.5	8 24 20.38	+20 8 41.5	1.8	19.3	1.46	Nov. 16	19 9.5	10 54 4.41	+8 5 35.0	1.6	16.8	1.21
2	7 40.6	8 24 22.71	20 8 30.6	1.8	19.3	1.46	17	19 6.0	10 54 32.02	8 3 0.4	1.6	16.8	1.21
3	7 36.7	8 24 25.82	20 8 17.1	1.8	19.2	1.45	18	19 2.5	10 54 59.11	8 0 28.9	1.6	16.9	1.21
4	7 32.8	8 24 29.70	20 8 1.0	1.8	19.2	1.45	19	18 59.0	10 55 25.69	7 58 0.7	1.6	16.9	1.22
5	7 28.9	8 24 34.35	20 7 42.2	1.8	19.1	1.44	20	18 55.5	10 55 51.73	7 55 35.8	1.6	17.0	1.22
6	7 25.1	8 24 39.78	+20 7 20.7	1.8	19.1	1.44	21	18 52.0	10 56 17.23	+7 53 14.3	1.6	17.0	1.22
7	7 21.3	8 24 45.98	20 6 56.6	1.8	19.0	1.44	22	18 48.5	10 56 42.18	7 50 56.0	1.6	17.1	1.23
8	7 17.5	8 24 52.95	20 6 29.9	1.8	18.9	1.43	23	18 45.0	10 57 6.58	7 48 41.1	1.6	17.1	1.23
9	7 13.7	8 25 0.67	20 6 0.5	1.8	18.9	1.43	24	18 41.5	10 57 30.41	7 46 29.7	1.6	17.2	1.23
10	7 9.9	8 25 9.15	20 5 28.4	1.8	18.8	1.42	25	18 37.9	10 57 53.68	7 44 21.9	1.6	17.2	1.23
11	7 6.1	8 25 18.37	+20 4 53.7	1.8	18.7	1.42	26	18 34.4	10 58 16.38	+7 42 17.7	1.6	17.3	1.24
12	7 2.4	8 25 28.33	20 4 16.5	1.7	18.7	1.42	27	18 30.8	10 58 38.50	7 40 17.0	1.6	17.3	1.24
13	6 58.6	8 25 39.03	20 3 36.7	1.7	18.6	1.41	28	18 27.2	10 59 0.03	7 38 19.9	1.6	17.4	1.24
14	6 54.9	8 25 50.46	20 2 54.2	1.7	18.6	1.41	29	18 23.6	10 59 20.97	7 36 26.6	1.6	17.4	1.25
15	6 51.2	8 26 2.61	20 2 9.3	1.7	18.5	1.41	30	18 20.0	10 59 41.32	7 34 37.0	1.6	17.5	1.25
16	6 47.4	8 26 15.48	+20 1 21.8	1.7	18.4	1.40	Dec. 1	18 16.4	11 0 1.07	+7 32 51.2	1.6	17.5	1.26
17	6 43.7	8 26 29.08	20 0 31.8	1.7	18.4	1.40	2	18 12.8	11 0 20.22	7 31 9.2	1.6	17.6	1.26
18	6 40.0	8 26 43.37	19 59 39.2	1.7	18.3	1.39	3	18 9.2	11 0 38.75	7 29 31.1	1.6	17.6	1.26
19	6 36.3	8 26 58.37	19 58 44.1	1.7	18.2	1.39	4	18 5.6	11 0 56.67	7 27 56.7	1.7	17.7	1.27
20	6 32.6	8 27 14.05	19 57 46.7	1.7	18.2	1.38	5	18 1.9	11 1 13.97	7 26 26.2	1.7	17.7	1.27
21	6 29.0	8 27 30.43	+19 56 46.8	1.7	18.1	1.38	6	17 58.3	11 1 30.64	+7 24 59.7	1.7	17.8	1.27
22	6 25.3	8 27 47.49	19 55 44.4	1.7	18.1	1.37	7	17 54.6	11 1 46.68	7 23 37.1	1.7	17.8	1.28
23	6 21.6	8 28 5.23	19 54 39.5	1.7	18.0	1.37	8	17 50.9	11 2 2.08	7 22 18.5	1.7	17.9	1.28
24	6 18.0	8 28 23.64	19 53 32.1	1.7	18.0	1.37	9	17 47.2	11 2 16.85	7 21 3.9	1.7	17.9	1.29
25	6 14.4	8 28 42.72	19 52 22.2	1.7	17.9	1.36	10	17 43.5	11 2 30.96	7 19 53.4	1.7	18.0	1.29
26	6 10.8	8 29 2.46	+19 51 10.0	1.7	17.9	1.36	11	17 39.8	11 2 44.42	+7 18 47.1	1.7	18.0	1.29
27	6 7.2	8 29 22.84	19 49 55.3	1.7	17.8	1.35	12	17 36.1	11 2 57.22	7 17 44.9	1.7	18.1	1.30
28	6 3.7	8 29 43.88	19 48 38.2	1.7	17.8	1.35	13	17 32.4	11 3 9.36	7 16 46.9	1.7	18.1	1.30
29	6 0.1	8 30 5.56	19 47 18.7	1.7	17.7	1.34	14	17 28.7	11 3 20.83	7 15 53.1	1.7	18.2	1.30
30	5 56.5	8 30 27.87	19 45 56.9	1.7	17.7	1.34	15	17 24.9	11 3 31.62	7 15 3.6	1.7	18.2	1.31
May 1	5 52.9	8 30 50.81	+19 44 32.7	1.7	17.6	1.33	16	17 21.1	11 3 41.73	+7 14 18.3	1.7	18.3	1.31
2	5 49.4	8 31 14.37	19 43 6.1	1.6	17.6	1.33	17	17 17.3	11 3 51.16	7 13 37.2	1.7	18.3	1.32
3	5 45.9	8 31 38.54	19 41 37.1	1.6	17.5	1.32	18	17 13.5	11 3 59.90	7 13 0.6	1.7	18.4	1.32
4	5 42.4	8 32 3.32	19 40 5.8	1.6	17.5	1.32	19	17 9.7	11 4 7.94	7 12 28.4	1.7	18.4	1.32
5	5 38.9	8 32 28.68	19 38 32.2	1.6	17.4	1.31	20	17 5.9	11 4 15.28	7 12 0.5	1.7	18.5	1.33
6	5 35.4	8 32 54.63	+19 36 56.3	1.6	17.4	1.31	21	17 2.1	11 4 21.92	+7 11 37.0	1.7	18.6	1.33
7	5 31.9	8 33 21.16	19 35 18.0	1.6	17.3	1.30	22	16 58.3	11 4 27.85	7 11 18.0	1.7	18.6	1.34
8	5 28.4	8 33 48.26	19 33 37.5	1.6	17.3	1.30	23	16 54.4	11 4 33.07	7 11 3.4	1.8	18.7	1.34
9	5 24.9	8 34 15.91	19 31 54.7	1.6	17.2	1.30	24	16 50.6	11 4 37.59	7 10 53.3	1.8	18.8	1.34
10	5 21.5	8 34 44.12	19 30 9.7	1.6	17.2	1.29	25	16 46.7	11 4 41.39	7 10 47.6	1.8	18.8	1.35
11	5 18.1	8 35 12.89	+19 28 22.4	1.6	17.1	1.29	26	16 42.8	11 4 44.48	+7 10 46.4	1.8	18.9	1.35
12	5 14.6	8 35 42.19	19 26 32.8	1.6	17.1	1.28	27	16 38.9	11 4 46.85	7 10 49.7	1.8	18.9	1.35
13	5 11.1	8 36 12.01	19 24 41.0	1.6	17.0	1.28	28	16 35.0	11 4 48.50	7 10 57.4	1.8	19.0	1.36
14	5 7.7	8 36 42.35	19 22 47.0	1.6	17.0	1.28	29	16 31.1	11 4 49.44	7 11 9.6	1.8	19.0	1.36
15	5 4.3	8 37 13.20	19 20 50.8	1.6	16.9	1.27	30	16 27.2	11 4 49.66	7 11 26.3	1.8	19.1	1.36
16	5 0.9	8 37 44.55	+19 18 52.5	1.6	16.9	1.27	31	16 23.2	11 4 49.17	+7 11 47.4	1.8	19.1	1.37
17	4 57.5	8 38 16.40	+19 16 52.1	1.6	16.8	1.27	32	16 19.3	11 4 47.95	+7 12 13.0	1.8	19.2	1.37

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid.T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid.T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
July 1	17 59.5	0 39 53.83	+1 43 25.4	0.9	8.3	0.59	Aug. 16	14 58.2	0 39 25.68	+1 26 58.4	1.0	9.0	0.64
2	17 55.7	0 40 1.48	1 43 56.5	0.9	8.3	0.59	17	14 54.1	0 39 16.65	1 25 45.5	1.0	9.0	0.64
3	17 51.9	0 40 8.77	1 44 25.2	0.9	8.3	0.59	18	14 50.0	0 39 7.30	1 24 30.7	1.0	9.0	0.64
4	17 48.1	0 40 15.71	1 44 51.6	0.9	8.3	0.59	19	14 45.9	0 38 57.63	1 23 14.0	1.0	9.0	0.64
5	17 44.3	0 40 22.30	1 45 15.5	0.9	8.3	0.59	20	14 41.8	0 38 47.63	1 21 55.5	1.0	9.0	0.64
6	17 40.5	0 40 28.51	+1 45 37.0	0.9	8.3	0.59	21	14 37.7	0 38 37.34	+1 20 35.3	1.0	9.0	0.64
7	17 36.6	0 40 34.36	1 45 56.3	0.9	8.4	0.60	22	14 33.6	0 38 26.74	1 19 13.4	1.0	9.0	0.64
8	17 32.8	0 40 39.84	1 46 13.1	0.9	8.4	0.60	23	14 29.5	0 38 15.82	1 17 49.7	1.0	9.0	0.64
9	17 29.0	0 40 44.97	1 46 27.6	0.9	8.4	0.60	24	14 25.4	0 38 4.60	1 16 24.2	1.0	9.0	0.64
10	17 25.1	0 40 49.73	1 46 39.8	0.9	8.4	0.60	25	14 21.3	0 37 53.11	1 14 57.2	1.0	9.0	0.65
11	17 21.2	0 40 54.12	+1 46 49.6	0.9	8.4	0.60	26	14 17.2	0 37 41.33	+1 13 28.7	1.0	9.1	0.65
12	17 17.4	0 40 58.14	1 46 57.1	1.0	8.4	0.60	27	14 13.0	0 37 29.27	1 11 58.6	1.0	9.1	0.65
13	17 13.5	0 41 1.80	1 47 2.2	1.0	8.5	0.60	28	14 8.9	0 37 16.93	1 10 26.9	1.0	9.1	0.65
14	17 9.6	0 41 5.08	1 47 4.8	1.0	8.5	0.60	29	14 4.7	0 37 4.33	1 8 53.8	1.0	9.1	0.65
15	17 5.7	0 41 8.00	1 47 5.2	1.0	8.5	0.61	30	14 0.6	0 36 51.47	1 7 19.3	1.0	9.1	0.65
16	17 1.9	0 41 10.54	+1 47 3.2	1.0	8.5	0.61	31	13 56.5	0 36 38.35	+1 5 43.4	1.0	9.1	0.65
17	16 58.0	0 41 12.71	1 46 58.8	1.0	8.5	0.61	Sept. 1	13 52.3	0 36 24.97	1 4 6.1	1.0	9.1	0.65
18	16 54.0	0 41 14.50	1 46 52.0	1.0	8.5	0.61	2	13 48.1	0 36 11.37	1 2 27.6	1.0	9.1	0.65
19	16 50.1	0 41 15.92	1 46 42.8	1.0	8.5	0.61	3	13 44.0	0 35 57.54	1 0 47.9	1.0	9.1	0.65
20	16 46.2	0 41 16.96	1 46 31.2	1.0	8.6	0.61	4	13 39.8	0 35 43.48	0 59 7.0	1.0	9.1	0.65
21	16 42.3	0 41 17.63	+1 46 17.3	1.0	8.6	0.61	5	13 35.7	0 35 29.19	+0 57 24.9	1.0	9.1	0.65
22	16 38.4	0 41 17.92	1 46 1.1	1.0	8.6	0.61	6	13 31.5	0 35 14.69	0 55 41.8	1.0	9.1	0.65
23	16 34.5	0 41 17.84	1 45 42.5	1.0	8.6	0.62	7	13 27.3	0 34 59.99	0 53 57.7	1.0	9.1	0.65
24	16 30.5	0 41 17.38	1 45 21.5	1.0	8.6	0.62	8	13 23.1	0 34 45.09	0 52 12.7	1.0	9.2	0.65
25	16 26.6	0 41 16.55	1 44 58.1	1.0	8.6	0.62	9	13 18.9	0 34 30.00	0 50 26.7	1.0	9.2	0.65
26	16 22.6	0 41 15.34	+1 44 32.4	1.0	8.7	0.62	10	13 14.7	0 34 14.73	+0 48 39.9	1.0	9.2	0.65
27	16 18.6	0 41 13.75	1 44 4.3	1.0	8.7	0.62	11	13 10.6	0 33 59.28	0 46 52.3	1.0	9.2	0.65
28	16 14.7	0 41 11.79	1 43 34.0	1.0	8.7	0.62	12	13 6.4	0 33 43.67	0 45 3.9	1.0	9.2	0.65
29	16 10.7	0 41 9.45	1 43 1.3	1.0	8.7	0.62	13	13 2.2	0 33 27.89	0 43 14.8	1.0	9.2	0.66
30	16 6.7	0 41 6.74	1 42 26.3	1.0	8.7	0.62	14	12 58.0	0 33 11.95	0 41 25.1	1.0	9.2	0.66
31	16 2.7	0 41 3.65	+1 41 49.1	1.0	8.8	0.63	15	12 53.8	0 32 55.87	+0 39 34.8	1.0	9.2	0.66
Aug. 1	15 58.8	0 41 0.19	1 41 9.6	1.0	8.8	0.63	16	12 49.6	0 32 39.65	0 37 43.8	1.0	9.2	0.66
2	15 54.8	0 40 56.38	1 40 27.8	1.0	8.8	0.63	17	12 45.4	0 32 23.30	0 35 52.3	1.0	9.2	0.66
3	15 50.8	0 40 52.20	1 39 43.8	1.0	8.8	0.63	18	12 41.2	0 32 6.84	0 34 0.4	1.0	9.2	0.66
4	15 46.8	0 40 47.65	1 38 57.6	1.0	8.8	0.63	19	12 37.0	0 31 50.27	0 32 8.2	1.0	9.2	0.66
5	15 42.7	0 40 42.74	+1 38 9.2	1.0	8.8	0.63	20	12 32.8	0 31 33.58	+0 30 15.6	1.0	9.2	0.66
6	15 38.7	0 40 37.47	1 37 18.6	1.0	8.8	0.63	21	12 28.6	0 31 16.80	0 28 22.7	1.0	9.2	0.66
7	15 34.7	0 40 31.85	1 36 25.8	1.0	8.9	0.63	22	12 24.4	0 30 59.94	0 26 29.7	1.0	9.2	0.66
8	15 30.7	0 40 25.87	1 35 30.9	1.0	8.9	0.63	23	12 20.2	0 30 43.00	0 24 36.6	1.0	9.2	0.66
9	15 26.6	0 40 19.54	1 34 33.9	1.0	8.9	0.63	24	12 15.9	0 30 25.99	0 22 43.3	1.0	9.2	0.66
10	15 22.6	0 40 12.87	+1 33 34.9	1.0	8.9	0.63	25	12 11.7	0 30 8.92	+0 20 50.0	1.0	9.2	0.66
11	15 18.5	0 40 5.85	1 32 33.8	1.0	8.9	0.63	26	12 7.5	0 29 51.81	0 18 56.8	1.0	9.2	0.66
12	15 14.5	0 39 58.49	1 31 30.7	1.0	8.9	0.63	27	12 3.3	0 29 34.67	0 17 3.7	1.0	9.2	0.66
13	15 10.4	0 39 50.79	1 30 25.6	1.0	8.9	0.64	28	11 59.0	0 29 17.50	0 15 10.8	1.0	9.2	0.66
14	15 6.4	0 39 42.76	1 29 18.5	1.0	8.9	0.64	29	11 54.8	0 29 0.32	0 13 18.0	1.0	9.2	0.66
15	15 2.3	0 39 34.39	+1 28 9.4	1.0	8.9	0.64	30	11 50.6	0 28 43.13	+0 11 25.6	1.0	9.3	0.66
16	14 58.2	0 39 25.68	+1 26 58.4	1.0	9.0	0.64	Oct. 1	11 46.4	0 28 25.93	+0 9 33.7	1.0	9.3	0.66

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	" s			h m	h m s	° ' "	"	" s	
Oct. 1	11 46.4	0 28 25.93	+0 9 33.7	1.0	9.3	0.66	Nov. 16	8 34.9	0 17 46.22	-0 53 58.7	1.0	8.9	0.64
2	11 42.1	0 28 8.73	0 7 42.2	1.0	9.3	0.66	17	8 30.8	0 17 38.45	0 54 35.5	1.0	8.9	0.64
3	11 37.9	0 27 51.56	0 5 51.1	1.0	9.3	0.66	18	8 26.8	0 17 31.03	0 55 9.8	1.0	8.9	0.64
4	11 33.7	0 27 34.43	0 4 0.6	1.0	9.3	0.66	19	8 22.7	0 17 23.97	0 55 41.7	1.0	8.9	0.63
5	11 29.5	0 27 17.34	0 2 10.7	1.0	9.3	0.66	20	8 18.7	0 17 17.28	0 56 11.1	1.0	8.9	0.63
6	11 25.3	0 27 0.28	+0 0 21.4	1.0	9.3	0.66	21	8 14.7	0 17 10.95	-0 56 37.9	1.0	8.8	0.63
7	11 21.1	0 26 43.28	-0 1 27.1	1.0	9.3	0.66	22	8 10.6	0 17 4.99	0 57 2.2	1.0	8.8	0.63
8	11 16.9	0 26 26.36	0 3 14.7	1.0	9.3	0.66	23	8 6.6	0 16 59.40	0 57 23.9	1.0	8.8	0.63
9	11 12.6	0 26 9.51	0 5 1.6	1.0	9.2	0.66	24	8 2.6	0 16 54.20	0 57 42.9	1.0	8.8	0.63
10	11 8.4	0 25 52.73	0 6 47.6	1.0	9.2	0.66	25	7 58.6	0 16 49.38	0 57 59.4	1.0	8.8	0.63
11	11 4.2	0 25 36.05	-0 8 32.7	1.0	9.2	0.66	26	7 54.6	0 16 44.93	-0 58 13.2	1.0	8.8	0.63
12	11 0.0	0 25 19.47	0 10 16.8	1.0	9.2	0.66	27	7 50.6	0 16 40.85	0 58 24.5	1.0	8.7	0.63
13	10 55.8	0 25 2.99	0 11 59.8	1.0	9.2	0.66	28	7 46.6	0 16 37.18	0 58 33.1	1.0	8.7	0.62
14	10 51.6	0 24 46.62	0 13 41.7	1.0	9.2	0.66	29	7 42.6	0 16 33.90	0 58 39.1	1.0	8.7	0.62
15	10 47.4	0 24 30.39	0 15 22.4	1.0	9.2	0.66	30	7 38.6	0 16 31.01	0 58 42.4	1.0	8.7	0.62
16	10 43.2	0 24 14.30	-0 17 1.9	1.0	9.2	0.66	Dec. 1	7 34.6	0 16 28.51	-0 58 43.1	1.0	8.7	0.62
17	10 39.0	0 23 58.35	0 18 40.1	1.0	9.2	0.66	2	7 30.7	0 16 26.40	0 58 41.1	1.0	8.7	0.62
18	10 34.8	0 23 42.54	0 20 17.1	1.0	9.2	0.65	3	7 26.7	0 16 24.68	0 58 36.6	1.0	8.7	0.62
19	10 30.6	0 23 26.90	0 21 52.7	1.0	9.2	0.65	4	7 22.8	0 16 23.36	0 58 29.5	1.0	8.6	0.62
20	10 26.4	0 23 11.43	0 23 26.7	1.0	9.2	0.65	5	7 18.8	0 16 22.43	0 58 19.7	1.0	8.6	0.62
21	10 22.3	0 22 56.14	-0 24 59.3	1.0	9.2	0.65	6	7 14.9	0 16 21.90	-0 58 7.3	1.0	8.6	0.61
22	10 18.1	0 22 41.02	0 26 30.4	1.0	9.1	0.65	7	7 10.9	0 16 21.76	0 57 52.3	1.0	8.6	0.61
23	10 13.9	0 22 26.11	0 27 59.9	1.0	9.1	0.65	8	7 7.0	0 16 22.02	0 57 34.6	1.0	8.6	0.61
24	10 9.7	0 22 11.42	0 29 27.7	1.0	9.1	0.65	9	7 3.1	0 16 22.68	0 57 14.3	1.0	8.6	0.61
25	10 5.6	0 21 56.94	0 30 53.8	1.0	9.1	0.65	10	6 59.2	0 16 23.74	0 56 51.5	1.0	8.6	0.61
26	10 1.4	0 21 42.67	-0 32 18.2	1.0	9.1	0.65	11	6 55.3	0 16 25.19	-0 56 26.1	1.0	8.5	0.61
27	9 57.2	0 21 28.63	0 33 40.8	1.0	9.1	0.65	12	6 51.4	0 16 27.03	0 55 58.1	1.0	8.5	0.61
28	9 53.1	0 21 14.83	0 35 1.6	1.0	9.1	0.65	13	6 47.5	0 16 29.26	0 55 27.4	1.0	8.5	0.61
29	9 48.9	0 21 1.28	0 36 20.5	1.0	9.1	0.65	14	6 43.6	0 16 31.90	0 54 54.2	1.0	8.5	0.60
30	9 44.7	0 20 47.97	0 37 37.5	1.0	9.1	0.65	15	6 39.7	0 16 34.94	0 54 18.4	1.0	8.5	0.60
31	9 40.6	0 20 34.93	-0 38 52.5	1.0	9.1	0.65	16	6 35.8	0 16 38.37	-0 53 40.0	1.0	8.5	0.60
Nov. 1	9 36.5	0 20 22.15	0 40 5.5	1.0	9.1	0.65	17	6 31.9	0 16 42.19	0 52 58.9	1.0	8.4	0.60
2	9 32.3	0 20 9.63	0 41 16.4	1.0	9.1	0.65	18	6 28.1	0 16 46.41	0 52 15.3	1.0	8.4	0.60
3	9 28.2	0 19 57.39	0 42 25.3	1.0	9.1	0.65	19	6 24.2	0 16 51.03	0 51 29.3	1.0	8.4	0.60
4	9 24.1	0 19 45.44	0 43 32.0	1.0	9.1	0.64	20	6 20.4	0 16 56.04	0 50 40.8	1.0	8.4	0.60
5	9 19.9	0 19 33.79	-0 44 36.6	1.0	9.0	0.64	21	6 16.6	0 17 1.45	-0 49 49.6	0.9	8.4	0.60
6	9 15.8	0 19 22.43	0 45 39.1	1.0	9.0	0.64	22	6 12.7	0 17 7.24	0 48 55.9	0.9	8.4	0.59
7	9 11.7	0 19 11.37	0 46 39.4	1.0	9.0	0.64	23	6 8.9	0 17 13.42	0 47 59.8	0.9	8.4	0.59
8	9 7.6	0 19 0.61	0 47 37.5	1.0	9.0	0.64	24	6 5.1	0 17 19.99	0 47 1.2	0.9	8.3	0.59
9	9 3.5	0 18 50.17	0 48 33.3	1.0	9.0	0.64	25	6 1.2	0 17 26.95	0 46 0.2	0.9	8.3	0.59
10	8 59.4	0 18 40.05	-0 49 26.8	1.0	9.0	0.64	26	5 57.4	0 17 34.30	-0 44 56.7	0.9	8.3	0.59
11	8 55.3	0 18 30.24	0 50 18.0	1.0	9.0	0.64	27	5 53.6	0 17 42.03	0 43 50.8	0.9	8.3	0.59
12	8 51.2	0 18 20.76	0 51 7.0	1.0	9.0	0.64	28	5 49.8	0 17 50.14	0 42 42.5	0.9	8.3	0.59
13	8 47.1	0 18 11.62	0 51 53.6	1.0	9.0	0.64	29	5 46.0	0 17 58.64	0 41 31.7	0.9	8.3	0.59
14	8 43.0	0 18 2.82	0 52 37.7	1.0	8.9	0.64	30	5 42.2	0 18 7.52	0 40 18.6	0.9	8.2	0.59
15	8 39.0	0 17 54.35	-0 53 19.4	1.0	8.9	0.64	31	5 38.4	0 18 16.78	-0 39 3.1	0.9	8.2	0.59
16	8 34.9	0 17 46.22	-0 53 58.7	1.0	8.9	0.64	32	5 34.7	0 18 26.40	-0 37 45.4	0.9	8.2	0.58

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid. T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
Apr. 1	18 31.2	19 12 53.03	-22 47 5.8	0.5	1.7	0.12	May 17	15 29.7	19 12 17.16	-22 49 24.0	0.5	1.8	0.13
2	18 27.3	19 12 57.08	22 47 0.3	0.5	1.7	0.12	18	15 25.7	19 12 11.62	22 49 35.0	0.5	1.8	0.13
3	18 23.5	19 13 0.91	22 46 55.3	0.5	1.7	0.12	19	15 21.7	19 12 5.90	22 49 46.3	0.5	1.8	0.13
4	18 19.6	19 13 4.53	22 46 50.7	0.5	1.7	0.12	20	15 17.7	19 12 0.02	22 49 57.8	0.5	1.8	0.13
5	18 15.7	19 13 7.92	22 46 46.6	0.5	1.7	0.12	21	15 13.6	19 11 53.96	22 50 9.6	0.5	1.8	0.13
6	18 11.8	19 13 11.10	-22 46 42.9	0.5	1.7	0.12	22	15 9.6	19 11 47.73	-22 50 21.7	0.5	1.8	0.13
7	18 8.0	19 13 14.06	22 46 39.5	0.5	1.7	0.12	23	15 5.6	19 11 41.32	22 50 34.1	0.5	1.8	0.13
8	18 4.1	19 13 16.80	22 46 36.4	0.5	1.7	0.12	24	15 1.5	19 11 34.75	22 50 46.7	0.5	1.8	0.13
9	18 0.2	19 13 19.31	22 46 33.6	0.5	1.7	0.12	25	14 57.5	19 11 28.02	22 50 59.5	0.5	1.8	0.13
10	17 56.3	19 13 21.62	22 46 31.3	0.5	1.7	0.12	26	14 53.4	19 11 21.13	22 51 12.5	0.5	1.8	0.13
11	17 52.4	19 13 23.71	-22 46 29.4	0.5	1.7	0.12	27	14 49.4	19 11 14.09	-22 51 25.8	0.5	1.8	0.13
12	17 48.5	19 13 25.58	22 46 27.8	0.5	1.7	0.13	28	14 45.3	19 11 6.88	22 51 39.3	0.5	1.8	0.13
13	17 44.6	19 13 27.23	22 46 26.6	0.5	1.7	0.13	29	14 41.3	19 10 59.53	22 51 53.0	0.5	1.8	0.13
14	17 40.7	19 13 28.67	22 46 25.8	0.5	1.7	0.13	30	14 37.2	19 10 52.03	22 52 6.9	0.5	1.8	0.13
15	17 36.8	19 13 29.89	22 46 25.4	0.5	1.7	0.13	31	14 33.2	19 10 44.39	22 52 21.2	0.5	1.8	0.13
16	17 32.9	19 13 30.89	-22 46 25.4	0.5	1.7	0.13	June 1	14 29.1	19 10 36.61	-22 52 35.7	0.5	1.8	0.13
17	17 29.0	19 13 31.67	22 46 25.7	0.5	1.7	0.13	2	14 25.0	19 10 28.69	22 52 50.3	0.5	1.8	0.13
18	17 25.0	19 13 32.23	22 46 26.4	0.5	1.7	0.13	3	14 21.0	19 10 20.63	22 53 5.0	0.5	1.8	0.13
19	17 21.1	19 13 32.58	22 46 27.5	0.5	1.7	0.13	4	14 16.9	19 10 12.44	22 53 19.8	0.5	1.8	0.13
20	17 17.2	19 13 32.72	22 46 29.0	0.5	1.7	0.13	5	14 12.8	19 10 4.12	22 53 34.8	0.5	1.8	0.13
21	17 13.2	19 13 32.64	-22 46 30.9	0.5	1.7	0.13	6	14 8.8	19 9 55.68	-22 53 50.1	0.5	1.8	0.13
22	17 9.3	19 13 32.33	22 46 33.1	0.5	1.7	0.13	7	14 4.7	19 9 47.12	22 54 5.5	0.5	1.8	0.13
23	17 5.4	19 13 31.81	22 46 35.7	0.5	1.7	0.13	8	14 0.6	19 9 38.43	22 54 21.1	0.5	1.8	0.13
24	17 1.4	19 13 31.08	22 46 38.7	0.5	1.7	0.13	9	13 56.6	19 9 29.62	22 54 36.9	0.5	1.8	0.13
25	16 57.5	19 13 30.14	22 46 42.0	0.5	1.7	0.13	10	13 52.5	19 9 20.71	22 54 52.7	0.5	1.8	0.13
26	16 53.5	19 13 28.96	-22 46 45.7	0.5	1.7	0.13	11	13 48.4	19 9 11.69	-22 55 8.7	0.5	1.8	0.13
27	16 49.6	19 13 27.58	22 46 49.8	0.5	1.7	0.13	12	13 44.3	19 9 2.56	22 55 24.8	0.5	1.8	0.13
28	16 45.6	19 13 25.99	22 46 54.3	0.5	1.8	0.13	13	13 40.2	19 8 53.33	22 55 40.9	0.5	1.8	0.13
29	16 41.7	19 13 24.19	22 46 59.1	0.5	1.8	0.13	14	13 36.1	19 8 44.01	22 55 57.1	0.5	1.8	0.13
30	16 37.7	19 13 22.18	22 47 4.3	0.5	1.8	0.13	15	13 32.0	19 8 34.61	22 56 13.5	0.5	1.8	0.13
May 1	16 33.7	19 13 19.95	-22 47 9.9	0.5	1.8	0.13	16	13 28.0	19 8 25.12	-22 56 30.1	0.5	1.8	0.13
2	16 29.8	19 13 17.52	22 47 15.8	0.5	1.8	0.13	17	13 23.9	19 8 15.55	22 56 46.7	0.5	1.8	0.13
3	16 25.8	19 13 14.88	22 47 22.0	0.5	1.8	0.13	18	13 19.8	19 8 5.89	22 57 3.4	0.5	1.8	0.13
4	16 21.8	19 13 12.04	22 47 28.6	0.5	1.8	0.13	19	13 15.7	19 7 56.16	22 57 20.1	0.5	1.8	0.13
5	16 17.8	19 13 8.99	22 47 35.6	0.5	1.8	0.13	20	13 11.6	19 7 46.36	22 57 36.8	0.5	1.8	0.13
6	16 13.8	19 13 5.74	-22 47 42.9	0.5	1.8	0.13	21	13 7.5	19 7 36.48	-22 57 53.6	0.5	1.8	0.13
7	16 9.8	19 13 2.28	22 47 50.4	0.5	1.8	0.13	22	13 3.4	19 7 26.53	22 58 10.4	0.5	1.8	0.13
8	16 5.8	19 12 58.63	22 47 58.3	0.5	1.8	0.13	23	12 59.3	19 7 16.52	22 58 27.2	0.5	1.8	0.13
9	16 1.8	19 12 54.79	22 48 6.6	0.5	1.8	0.13	24	12 55.2	19 7 6.45	22 58 44.1	0.5	1.8	0.13
10	15 57.8	19 12 50.75	22 48 15.2	0.5	1.8	0.13	25	12 51.1	19 6 56.32	22 59 1.1	0.5	1.8	0.13
11	15 53.8	19 12 46.51	-22 48 24.1	0.5	1.8	0.13	26	12 47.0	19 6 46.15	-22 59 18.1	0.5	1.8	0.13
12	15 49.8	19 12 42.10	22 48 33.3	0.5	1.8	0.13	27	12 42.9	19 6 35.94	22 59 35.0	0.5	1.8	0.13
13	15 45.8	19 12 37.49	22 48 42.9	0.5	1.8	0.13	28	12 38.8	19 6 25.68	22 59 51.9	0.5	1.8	0.13
14	15 41.8	19 12 32.68	22 48 52.8	0.5	1.8	0.13	29	12 34.7	19 6 15.38	23 0 8.8	0.5	1.8	0.13
15	15 37.8	19 12 27.67	22 49 2.9	0.5	1.8	0.13	30	12 30.6	19 6 5.05	23 0 25.7	0.5	1.8	0.13
16	15 33.8	19 12 22.51	-22 49 13.3	0.5	1.8	0.13	July 1	12 26.5	19 5 54.70	-23 0 42.6	0.5	1.8	0.13
17	15 29.7	19 12 17.16	-22 49 24.0	0.5	1.8	0.13	2	12 22.3	19 5 44.32	-23 0 59.5	0.5	1.8	0.13

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid.T. of S.D. Pass. Mer.	Date.	Mean Time of Transit.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Semi- diam.	Sid.T. of S.D. Pass. Mer.
	h m	h m s	° ' "	"	"	s		h m	h m s	° ' "	"	"	s
July 1	12 26.5	19 5 54.70	-23 0 42.6	0.5	1.8	0.13	Aug. 16	9 18.4	18 58 40.83	-23 11 30.6	0.5	1.8	0.13
2	12 22.3	19 5 44.32	23 0 59.5	0.5	1.8	0.13	17	9 14.3	18 58 33.80	23 11 40.0	0.5	1.8	0.13
3	12 18.2	19 5 33.92	23 1 16.3	0.5	1.8	0.13	18	9 10.3	18 58 26.92	23 11 49.2	0.5	1.8	0.13
4	12 14.1	19 5 23.51	23 1 33.1	0.5	1.8	0.13	19	9 6.3	18 58 20.20	23 11 58.3	0.5	1.8	0.13
5	12 10.0	19 5 13.09	23 1 49.9	0.5	1.8	0.13	20	9 2.2	18 58 13.65	23 12 7.0	0.5	1.8	0.13
6	12 5.9	19 5 2.67	-23 2 6.6	0.5	1.8	0.13	21	8 58.2	18 58 7.26	-23 12 15.3	0.5	1.8	0.13
7	12 1.8	19 4 52.24	23 2 23.2	0.5	1.8	0.13	22	8 54.1	18 58 1.04	23 12 23.4	0.5	1.8	0.13
8	11 57.7	19 4 41.82	23 2 39.8	0.5	1.8	0.13	23	8 50.1	18 57 54.98	23 12 31.2	0.5	1.8	0.13
9	11 53.6	19 4 31.41	23 2 56.3	0.5	1.8	0.13	24	8 46.1	18 57 49.11	23 12 38.8	0.5	1.8	0.13
10	11 49.5	19 4 21.00	23 3 12.7	0.5	1.8	0.13	25	8 42.1	18 57 43.42	23 12 46.1	0.5	1.8	0.13
11	11 45.4	19 4 10.61	-23 3 28.9	0.5	1.8	0.13	26	8 38.0	18 57 37.90	-23 12 53.1	0.5	1.8	0.13
12	11 41.3	19 4 0.24	23 3 45.1	0.5	1.8	0.13	27	8 34.0	18 57 32.55	23 12 59.9	0.5	1.8	0.13
13	11 37.2	19 3 49.90	23 4 1.2	0.5	1.8	0.13	28	8 30.0	18 57 27.40	23 13 6.3	0.5	1.8	0.13
14	11 33.1	19 3 39.58	23 4 17.3	0.5	1.8	0.13	29	8 26.0	18 57 22.44	23 13 12.5	0.5	1.8	0.13
15	11 29.0	19 3 29.28	23 4 33.2	0.5	1.8	0.13	30	8 22.0	18 57 17.66	23 13 18.4	0.5	1.8	0.13
16	11 24.9	19 3 19.02	-23 4 48.9	0.5	1.8	0.13	31	8 18.0	18 57 13.07	-23 13 24.1	0.5	1.8	0.13
17	11 20.8	19 3 8.80	23 5 4.5	0.5	1.8	0.13	Sept. 1	8 13.9	18 57 8.68	23 13 29.5	0.5	1.8	0.13
18	11 16.7	19 2 58.63	23 5 20.1	0.5	1.8	0.13	2	8 9.9	18 57 4.49	23 13 34.6	0.5	1.8	0.13
19	11 12.6	19 2 48.51	23 5 35.5	0.5	1.8	0.13	3	8 6.0	18 57 0.49	23 13 39.4	0.5	1.8	0.13
20	11 8.5	19 2 38.44	23 5 50.7	0.5	1.8	0.13	4	8 2.0	18 56 56.68	23 13 43.8	0.5	1.8	0.13
21	11 4.4	19 2 28.42	-23 6 5.8	0.5	1.8	0.13	5	7 58.0	18 56 53.08	-23 13 47.9	0.5	1.8	0.13
22	11 0.3	19 2 18.46	23 6 20.8	0.5	1.8	0.13	6	7 54.0	18 56 49.68	23 13 51.8	0.5	1.8	0.13
23	10 56.2	19 2 8.56	23 6 35.6	0.5	1.8	0.13	7	7 50.0	18 56 46.48	23 13 55.5	0.5	1.8	0.13
24	10 52.1	19 1 58.73	23 6 50.2	0.5	1.8	0.13	8	7 46.0	18 56 43.48	23 13 58.9	0.5	1.8	0.13
25	10 48.0	19 1 48.98	23 7 4.6	0.5	1.8	0.13	9	7 42.0	18 56 40.70	23 14 2.0	0.5	1.8	0.13
26	10 43.9	19 1 39.30	-23 7 18.8	0.5	1.8	0.13	10	7 38.1	18 56 38.12	-23 14 4.8	0.5	1.8	0.13
27	10 39.8	19 1 29.71	23 7 32.8	0.5	1.8	0.13	11	7 34.1	18 56 35.74	23 14 7.2	0.5	1.8	0.13
28	10 35.7	19 1 20.21	23 7 46.7	0.5	1.8	0.13	12	7 30.1	18 56 33.56	23 14 9.3	0.5	1.8	0.13
29	10 31.7	19 1 10.80	23 8 0.5	0.5	1.8	0.13	13	7 26.2	18 56 31.61	23 14 11.2	0.5	1.8	0.13
30	10 27.6	19 1 1.48	23 8 14.1	0.5	1.8	0.13	14	7 22.2	18 56 29.87	23 14 12.8	0.5	1.8	0.13
31	10 23.5	19 0 52.25	-23 8 27.5	0.5	1.8	0.13	15	7 18.2	18 56 28.33	-23 14 14.1	0.5	1.8	0.13
Aug. 1	10 19.4	19 0 43.13	23 8 40.6	0.5	1.8	0.13	16	7 14.3	18 56 27.00	23 14 15.1	0.5	1.7	0.13
2	10 15.3	19 0 34.11	23 8 53.5	0.5	1.8	0.13	17	7 10.3	18 56 25.90	23 14 15.8	0.5	1.7	0.13
3	10 11.2	19 0 25.19	23 9 6.2	0.5	1.8	0.13	18	7 6.4	18 56 25.02	23 14 16.1	0.5	1.7	0.13
4	10 7.2	19 0 16.39	23 9 18.7	0.5	1.8	0.13	19	7 2.4	18 56 24.35	23 14 16.2	0.5	1.7	0.13
5	10 3.1	19 0 7.71	-23 9 31.0	0.5	1.8	0.13	20	6 58.5	18 56 23.89	-23 14 16.1	0.5	1.7	0.13
6	9 59.0	18 59 59.15	23 9 43.1	0.5	1.8	0.13	21	6 54.6	18 56 23.66	23 14 15.7	0.5	1.7	0.13
7	9 54.9	18 59 50.72	23 9 54.9	0.5	1.8	0.13	22	6 50.6	18 56 23.65	23 14 14.9	0.5	1.7	0.13
8	9 50.9	18 59 42.41	23 10 6.5	0.5	1.8	0.13	23	6 46.7	18 56 23.85	23 14 13.9	0.5	1.7	0.13
9	9 46.8	18 59 34.23	23 10 17.9	0.5	1.8	0.13	24	6 42.8	18 56 24.27	23 14 12.4	0.5	1.7	0.13
10	9 42.7	18 59 26.18	-23 10 29.0	0.5	1.8	0.13	25	6 38.9	18 56 24.92	-23 14 10.6	0.5	1.7	0.13
11	9 38.7	18 59 18.27	23 10 39.9	0.5	1.8	0.13	26	6 34.9	18 56 25.79	23 14 8.6	0.5	1.7	0.13
12	9 34.6	18 59 10.49	23 10 50.8	0.5	1.8	0.13	27	6 31.0	18 56 26.88	23 14 6.3	0.5	1.7	0.13
13	9 30.6	18 59 2.85	23 11 1.3	0.5	1.8	0.13	28	6 27.1	18 56 28.19	23 14 3.7	0.5	1.7	0.13
14	9 26.5	18 58 55.36	23 11 11.4	0.5	1.8	0.13	29	6 23.2	18 56 29.72	23 14 0.8	0.5	1.7	0.13
15	9 22.5	18 58 48.02	-23 11 21.1	0.5	1.8	0.13	30	6 19.3	18 56 31.47	-23 13 57.6	0.5	1.7	0.13
16	9 18.4	18 58 40.83	23 11 30.6	0.5	1.8	0.13	Oct. 1	6 15.4	18 56 33.44	-23 13 54.1	0.5	1.7	0.13

PART III

P H E N O M E N A

PART III

P H E N O M E N A

ECLIPSES IN 1908.

In the year 1908 there will be three eclipses of the Sun and a Lunar Appulse.

I.—*A Total Eclipse of the Sun*, 1908, January 3, invisible at Washington.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of δ in right ascension, January 3		d	h	m	s
			9	45	14.3
Sun and Moon's R. A.	18 52 47.55				
Hourly motions				11.02	and 164.96
Sun's declination	22 53 44.5 S.				
Hourly motion				0	13.9 N.
Moon's declination	22 41 57.1 S.				
Hourly motion				0	3.3 S.
Sun's equa. hor. parallax	8.9				
Sun's true semidiameter				16	16.0
Moon's equa. hor. parallax	61 15.7				
Moon's true semidiameter				16	40.8

CIRCUMSTANCES OF THE ECLIPSE.

		Greenwich Mean Time.			Longitude from Greenwich.	Latitude.
		d	h	m		
Eclipse begins	January	3	7	7.7	167 10.6 E.	7 8.3 N.
Central eclipse begins		3	8	4.1	154 39.2 E.	10 45.1 N.
Central eclipse at noon		3	9	45.2	145 13.9 W.	11 51.0 S.
Central eclipse ends		3	11	26.7	84 49.1 W.	9 53.4 N.
Eclipse ends		3	12	23.1	97 20.6 W.	6 16.7 N.

II.—*An Annular Eclipse of the Sun*, 1908, June 28, visible at Washington as a partial eclipse.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of δ in right ascension, June 28		d	h	m	s
			4	30	39.4
Sun and Moon's R. A.	6 28 25.85				
Hourly motions				10.37	and 133.40
Sun's declination	23 17 24.0 N.				
Hourly motion				0	7.0 S.
Moon's declination	23 25 0.3 N.				
Hourly motion				1	19.0 N.
Sun's equa. hor. parallax	8.7				
Sun's true semidiameter				15	43.8
Moon's equa. hor. parallax	54 53.7				
Moon's true semidiameter				14	56.5

CIRCUMSTANCES OF THE ECLIPSE.

		Greenwich Mean Time.			Longitude from Greenwich.	Latitude.
		d	h	m		
Eclipse begins	June	28	1	29.2	112 24.8 W.	1 58.4 N.
Central eclipse begins		28	2	34.7	129 56.8 W.	4 39.3 N.
Central eclipse at noon		28	4	30.7	66 55.3 W.	31 27.3 N.
Central eclipse ends		28	6	24.9	1 8.0 W.	10 1.0 N.
Eclipse ends		28	7	30.5	18 42.4 W.	7 21.0 N.

III.—*A Lunar Appulse*, December 7, 1908, the Moon just rising at Washington, and visible generally throughout Europe, Asia, Africa, and the extreme eastern portions of North and South America.

ELEMENTS OF THE APPULSE.

Greenwich mean time of δ in right ascension, December		d	h	m	s
		7	9	31	32.0
Sun's right ascension	^h 16 ^m 56 ^s 39.50	Hourly motion		^s 10.94	
Moon's right ascension	^h 4 ^m 56 ^s 39.50	Hourly motion		139.80	
	^o ' "			' "	
Sun's declination	22 39 9.6 S.	Hourly motion		0 16.5 S.	
Moon's declination	21 40 28.1 N.	Hourly motion		6 33.6 N.	
Sun's equa. hor. parallax	8.9	Sun's true semidiameter		16 14.4	
Moon's equa. hor. parallax	57 5.7	Moon's true semidiameter		15 32.7	

CIRCUMSTANCES OF THE APPULSE.

Nearest approach of Moon to Earth's shadow, December	d	h	m
	7	9	55
Computed least distance of Moon's limb from shadow			12"
Angle of position of point of nearest approach, 12° to the west from north point.			

IV.—*A Central Eclipse of the Sun*, 1908, December 22–23, invisible at Washington. The central eclipse will be annular at the beginning and end, and will be total in the middle.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of δ in right ascension, December		d	h	m	s
		22	23	49	17.8
Sun and Moon's R. A.	^h 18 ^m 5 ^s 36.19	Hourly motions		^s 11.11 and ^s 154.08	
	^o ' "			' "	
Sun's declination	23 26 42.1 S.	Hourly motion		0 1.5 N.	
Moon's declination	23 56 10.4 S.	Hourly motion		2 53.7 S.	
Sun's equa. hor. parallax	8.9	Sun's true semidiameter		16 15.7	
Moon's equa. hor. parallax	58 58.7	Moon's true semidiameter		16 3.5	

CIRCUMSTANCES OF THE ECLIPSE.

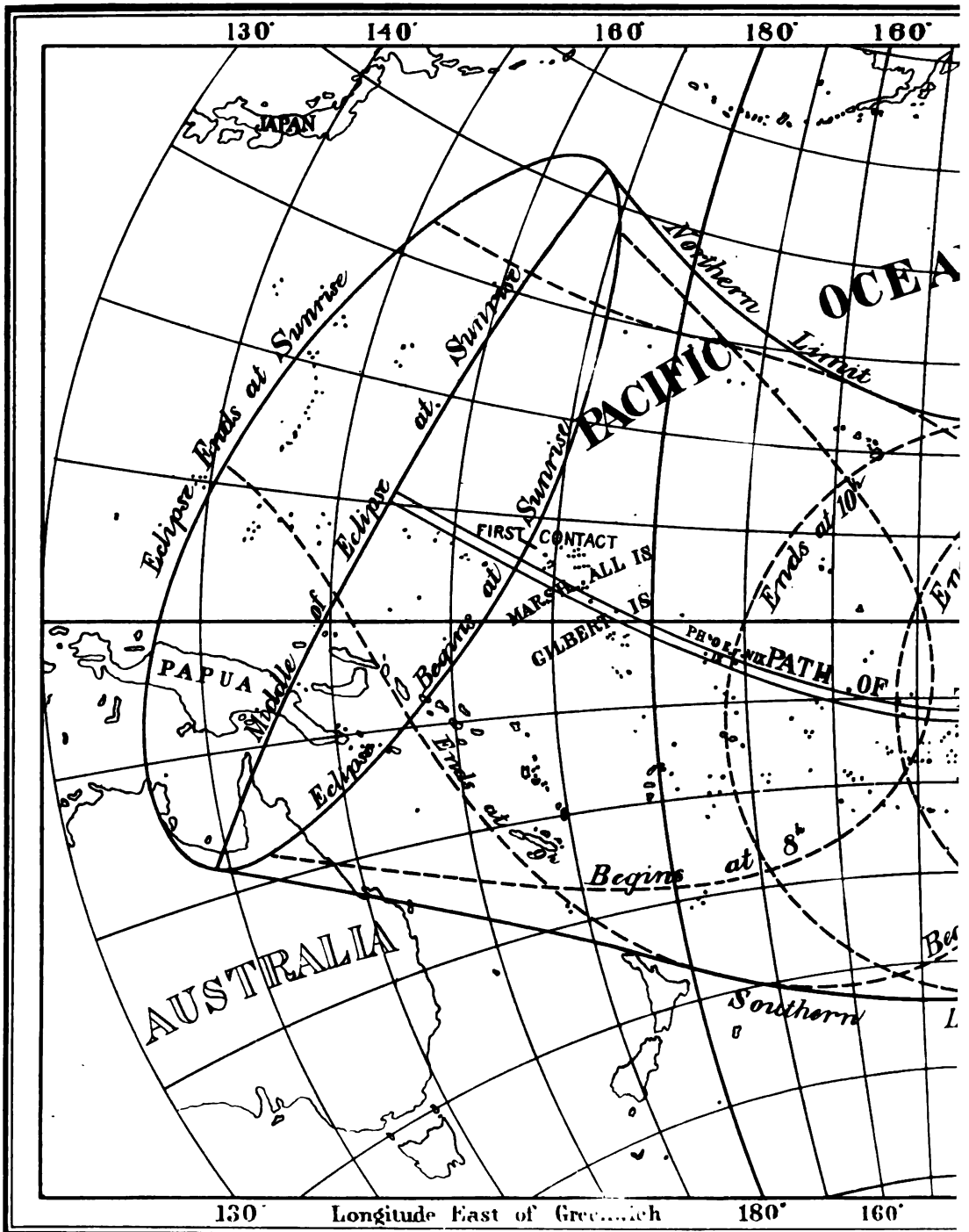
		Greenwich Mean Time.			Longitude from Greenwich.		Latitude.	
		d	h	m	°	'	°	'
Eclipse begins	December	22	21	6.6	52	24.8 W.	12	33.8 S.
Central eclipse begins		22	22	11.3	73	31.7 W.	22	46.1 S.
Central eclipse changes from annular to total		22	22	57.9	28	3.0 W.	46	13.0 S.
Central eclipse at noon		22	23	49.3	2	27.6 E.	53	46.0 S.
Central eclipse changes from total to annular		23	0	37.9	36	18.0 E.	51	24.0 S.
Central eclipse ends		23	1	17.7	86	1.9 E.	31	54.4 S.
Eclipse ends		23	2	22.3	64	14.0 E.	21	52.3 S.

The regions within which the first and second eclipses of the Sun are visible are laid down on the accompanying charts, from which, by means of the dotted lines, the Greenwich times of beginning and ending at any place may be found with an uncertainty which will vary from three or four minutes for a high Sun, to fifteen or twenty minutes when the Sun is near the horizon.

**BESSELIAN ELEMENTS OF THE TOTAL ECLIPSE
OF THE SUN, 1908, JANUARY 3.**

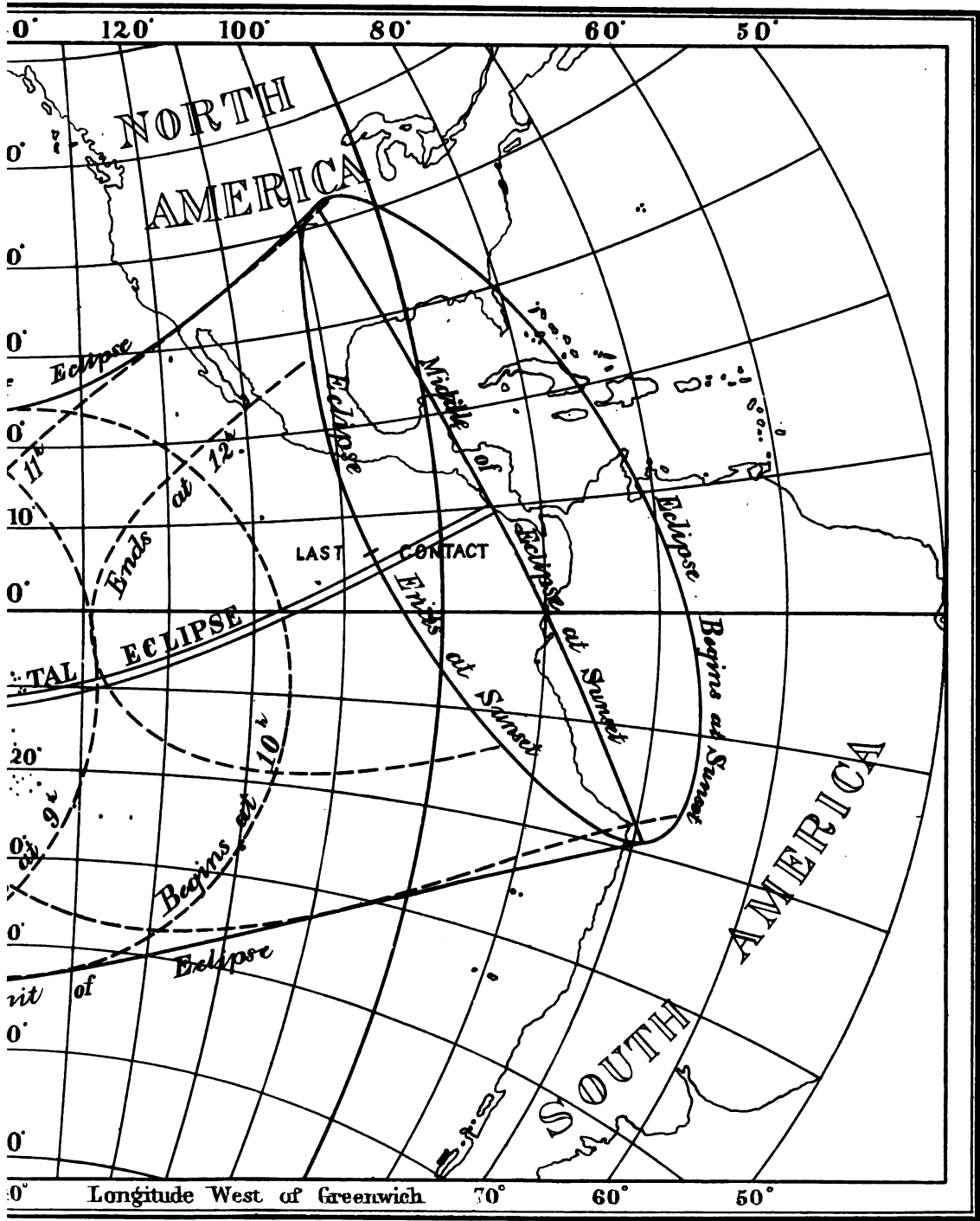
Greenwich Mean Time.	Co-ordinates of Center of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Shadow on Fundamental Plane.	
	<i>x</i>	<i>y</i>	Log sin <i>d</i>	Log cos <i>d</i>	μ	<i>l</i> ₁	<i>l</i> ₂
h m							
7 0	-1.599 71	+0.207 21	-9.590 21	+9.964 33	103 55.9	+0.539 12	-0.00 676
10	1.502 93	0.206 27	9.590 20	9.964 33	106 25.8	0.539 13	0.00 676
20	1.406 14	0.205 34	9.590 19	9.964 33	108 55.8	0.539 13	0.00 675
30	1.309 34	0.204 43	9.590 18	9.964 33	111 25.8	0.539 14	0.00 675
40	1.212 54	0.203 52	9.590 16	9.964 33	113 55.7	0.539 14	0.00 674
50	1.115 74	0.202 62	9.590 15	9.964 34	116 25.7	0.539 14	0.00 674
8 0	-1.018 93	+0.201 73	-9.590 14	+9.964 34	118 55.7	+0.539 14	-0.00 674
10	0.922 12	0.200 85	9.590 13	9.964 34	121 25.6	0.539 15	0.00 674
20	0.825 31	0.199 97	9.590 12	9.964 34	123 55.6	0.539 15	0.00 674
30	0.728 49	0.199 11	9.590 11	9.964 34	126 25.6	0.539 15	0.00 674
40	0.631 67	0.198 26	9.590 09	9.964 35	128 55.5	0.539 14	0.00 674
50	0.534 85	0.197 41	9.590 08	9.964 35	131 25.5	0.539 14	0.00 674
9 0	-0.438 03	+0.196 58	-9.590 07	+9.964 35	133 55.5	+0.539 14	-0.00 674
10	0.341 21	0.195 75	9.590 06	9.964 35	136 25.4	0.539 14	0.00 675
20	0.244 38	0.194 94	9.590 05	9.964 35	138 55.4	0.539 13	0.00 675
30	0.147 55	0.194 13	9.590 04	9.964 36	141 25.4	0.539 13	0.00 676
40	-0.050 73	0.193 33	9.590 03	9.964 36	143 55.3	0.539 12	0.00 676
50	+0.046 10	0.192 54	9.590 01	9.964 36	146 25.3	0.539 12	0.00 677
10 0	+0.142 93	+0.191 76	-9.590 00	+9.964 36	148 55.3	+0.539 11	-0.00 678
10	0.239 76	0.190 99	9.589 99	9.964 36	151 25.3	0.539 10	0.00 678
20	0.336 58	0.190 23	9.589 98	9.964 37	153 55.2	0.539 09	0.00 679
30	0.433 41	0.189 48	9.589 97	9.964 37	156 25.2	0.539 08	0.00 680
40	0.530 24	0.188 74	9.589 96	9.964 37	158 55.2	0.539 07	0.00 681
50	0.627 06	0.188 00	9.589 94	9.964 37	161 25.1	0.539 06	0.00 682
11 0	+0.723 88	+0.187 28	-9.589 93	+9.964 37	163 55.1	+0.539 05	-0.00 683
10	0.820 70	0.186 57	9.589 92	9.964 38	166 25.0	0.539 04	0.00 684
20	0.917 52	0.185 86	9.589 91	9.964 38	168 55.0	0.539 03	0.00 686
30	1.014 34	0.185 17	9.589 90	9.964 38	171 25.0	0.539 01	0.00 687
40	1.111 15	0.184 48	9.589 89	9.964 38	173 54.9	0.539 00	0.00 688
50	1.207 96	0.183 80	9.589 87	9.964 39	176 24.9	0.538 98	0.00 690
12 0	+1.304 77	+0.183 14	-9.589 86	+9.964 39	178 54.9	+0.538 97	-0.00 691
10	1.401 57	0.182 48	9.589 85	9.964 39	181 24.8	0.538 95	0.00 693
20	1.498 37	0.181 83	9.589 84	9.964 39	183 54.8	0.538 94	0.00 695
30	+1.595 17	+0.181 19	-9.589 83	+9.964 39	186 24.8	+0.538 92	-0.00 697
Greenwich Mean Time.	Log <i>x'</i> for 1 Minute.	Log <i>y'</i> for 1 Minute.	Log μ' for 1 Minute.	Log Tangents of Angles of Cones.			
				Penumbra.	Shadow.		
h m							
7 0	+ 7.9858	- 5.974	+ 1.1760	+ 7.677 15	+ 7.674 98		
8 0	7.9859	5.947	1.1760	7.677 15	7.674 98		
9 0	7.9860	5.919	1.1760	7.677 15	7.674 98		
10 0	7.9860	5.889	1.1760	7.677 15	7.674 98		
11 0	7.9860	5.857	1.1760	7.677 15	7.674 98		
12 0	7.9859	5.821	1.1760	7.677 15	7.674 98		
13 0	+ 7.9858	- 5.783	+ 1.1760	+ 7.677 15	+ 7.674 98		

TOTAL ECLIPSE C



Note: The hours of beginning and ending are

JANUARY 3RD 1908.



expressed in Greenwich Mean Time.

THE MORRIS PETLIS CO., PHOTO-LITHO., WASHINGTON D C

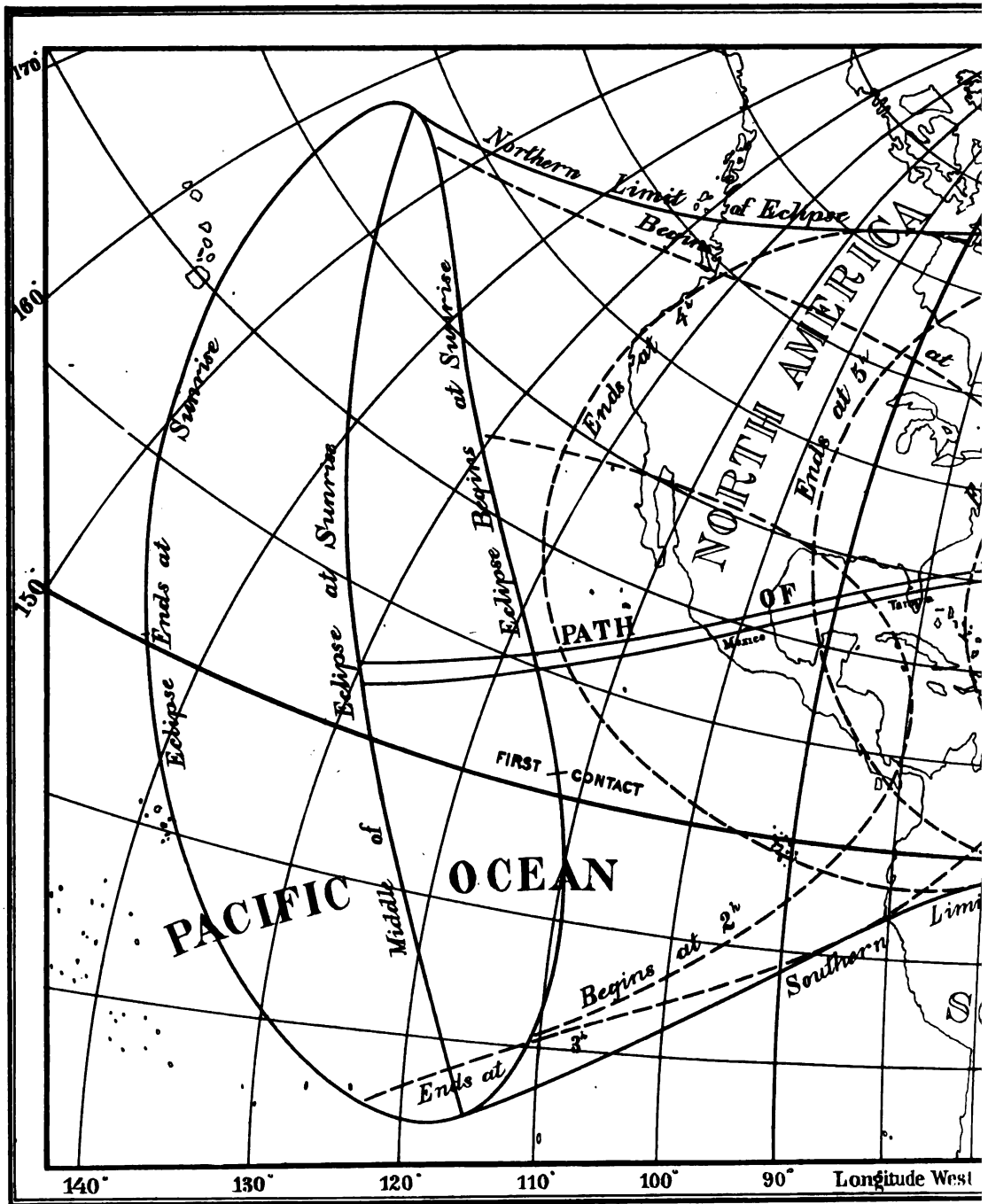
PATH OF THE SHADOW DURING THE TOTAL ECLIPSE
OF THE SUN, 1908, JANUARY 3.

Greenwich Mean Time.	Northern Limit of Shadow Path.		Central Line.		Southern Limit of Shadow Path.		Duration of Totality on Central Line.
	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	
Limits.	° ' "	° ' " E.	° ' "	° ' " E.	° ' "	° ' " E.	m s
8 ^h 5 ^m	+ 11 6	154 48 E.	+ 10 45.1	154 39.2 E.	+ 10 23	154 30 E.	. . .
	8 9	161 37	7 45.3	161 27.9	7 21	161 19	1 38.4
10	3 41	171 18	3 15.1	171 6.9	2 49	170 55	2 1.7
15	+ 1 10	176 37 E.	+ 0 42.0	176 25.3 E.	+ 0 14	176 13 E.	2 17.3
20	- 0 44	179 22 W.	- 1 13.7	179 33.9 W.	- 1 43	179 46 W.	2 30.3
25	2 17	176 2	2 48.1	176 14.2	3 19	176 26	2 42.0
30	- 3 36.3	173 8.6	- 4 8.2	173 20.7	- 4 40.1	173 32.8	2 52.6
35	4 44.5	170 33.4	5 17.4	170 45.1	5 50.3	170 56.8	3 2.5
40	5 44.1	168 11.6	6 18.0	168 22.9	6 51.9	168 34.2	3 11.7
45	6 36.6	166 0.0	7 11.3	166 10.8	7 46.0	166 21.6	3 20.2
50	7 22.9	163 56.4	7 58.5	164 6.7	8 34.1	164 17.0	3 28.2
55	8 3.8	161 59.3	8 40.1	162 8.9	9 16.4	162 18.5	3 35.5
9 0	- 8 39.9	160 7.4	- 9 16.9	160 16.3	- 9 53.9	160 25.2	3 42.2
5	9 11.5	158 19.6	9 49.1	158 27.8	10 26.7	158 36.0	3 48.3
10	9 39.0	156 35.4	10 17.1	156 42.7	10 55.2	156 50.0	3 53.8
15	10 2.6	154 53.9	10 41.2	155 0.4	11 19.8	155 6.9	3 58.7
20	10 22.4	153 14.7	11 1.5	153 20.3	11 40.6	153 25.9	4 2.8
25	10 38.8	151 37.4	11 18.2	151 42.0	11 57.6	151 46.6	4 6.3
30	- 10 51.7	150 1.3	- 11 31.4	150 5.0	- 12 11.1	150 8.7	4 9.0
35	11 1.3	148 26.2	11 41.2	148 28.9	12 21.1	148 31.6	4 11.1
40	11 7.7	146 51.8	11 47.7	146 53.5	12 27.7	146 55.2	4 12.3
45	11 10.8	145 17.7	11 50.9	145 18.4	12 31.0	145 19.1	4 12.9
50	11 10.7	143 43.7	11 50.8	143 43.3	12 30.9	143 42.9	4 12.6
55	11 7.4	142 9.3	11 47.4	142 7.9	12 27.4	142 6.5	4 11.7
10 0	- 11 0.7	140 34.2	- 11 40.6	140 31.8	- 12 20.5	140 29.4	4 10.0
5	10 50.8	138 58.2	11 30.4	138 54.7	12 10.0	138 51.2	4 7.5
10	10 37.4	137 20.7	11 16.8	137 16.3	11 56.2	137 11.9	4 4.3
15	10 20.6	135 41.4	10 59.6	135 36.1	11 38.6	135 30.8	4 0.4
20	10 0.1	133 59.9	10 38.6	133 53.7	11 17.1	133 47.5	3 55.8
25	9 35.7	132 15.6	10 13.8	132 8.5	10 51.9	132 1.4	3 50.6
30	- 9 7.2	130 28.0	- 9 44.7	130 20.0	- 10 22.2	130 12.0	3 44.7
35	8 34.4	128 36.1	9 11.2	128 27.4	9 48.0	128 18.7	3 38.2
40	7 56.6	126 39.2	8 32.8	126 29.8	9 9.0	126 20.4	3 31.0
45	7 13.7	124 36.0	7 49.1	124 26.0	8 24.5	124 16.0	3 23.2
50	6 24.7	122 25.1	6 59.2	122 14.5	7 33.7	122 3.9	3 14.8
55	5 28.8	120 4.2	6 2.4	119 53.1	6 36.0	119 42.0	3 5.8
11 0	- 4 25	117 30	- 4 57.1	117 19.0	- 5 30	117 8	2 56.1
5	3 10	114 40	3 41.5	114 27.8	4 13	114 16	2 45.6
10	- 1 42	111 24	2 12.2	111 12.2	2 42	111 0	2 34.1
15	+ 0 6	107 30	- 0 23.2	107 18.5	- 0 52	107 7	2 21.4
20	2 26	102 28	+ 1 59.3	102 16.2	+ 1 32	102 5	2 6.3
25	6 14	94 11	5 49.4	94 1.3	5 25	93 52	1 45.4
Limits.	+ 10 15	84 58 W.	+ 9 53.4	84 49.1 W.	+ 9 32	84 40 W.	. . .

BESSELIAN ELEMENTS OF THE ANNULAR ECLIPSE OF THE SUN, 1908, JUNE 28.

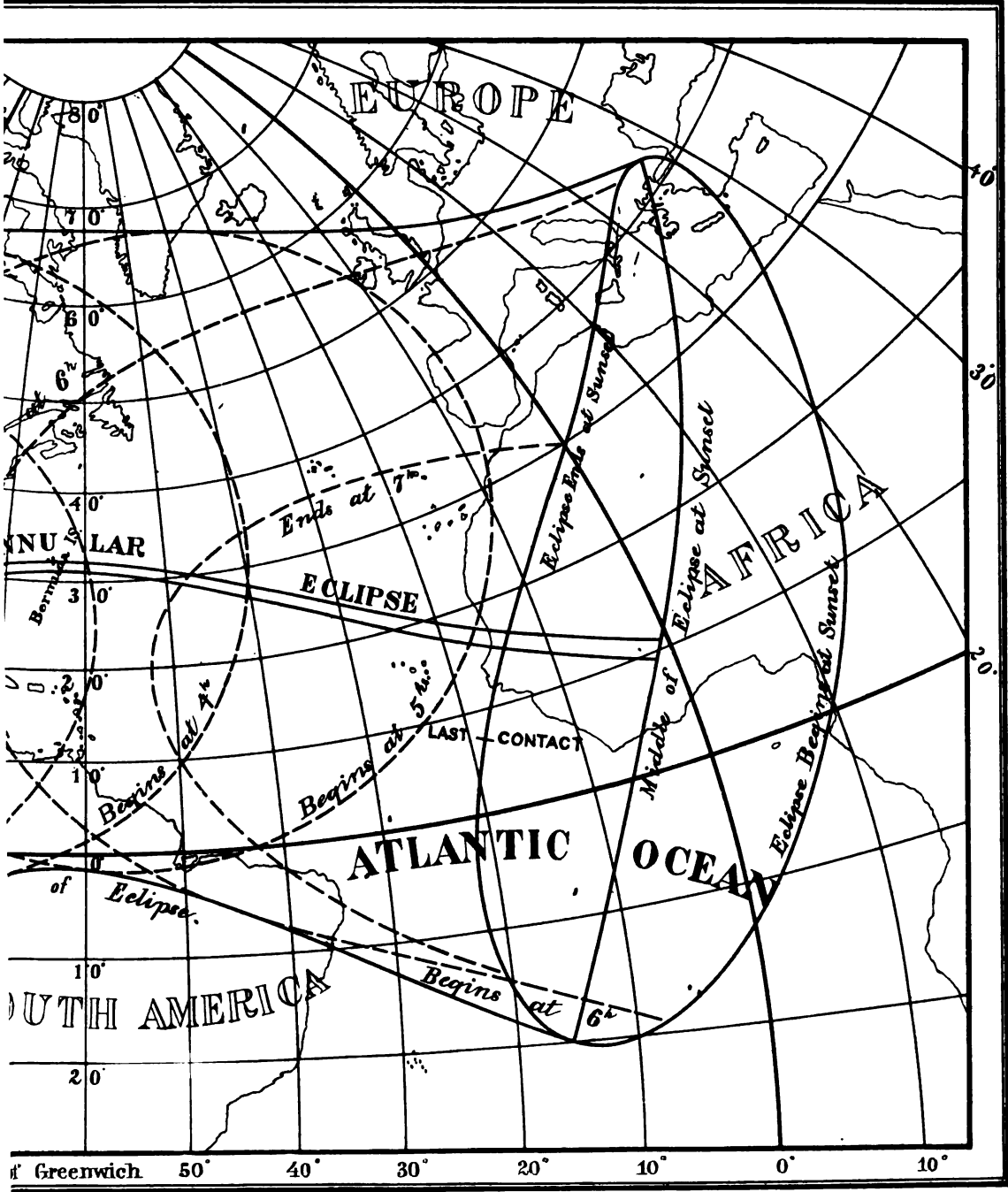
Greenwich Mean Time.	Co-ordinates of Center of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Shadow on Fundamental Plane.	
	x	y	Log sin d	Log cos d	μ	l_1	l_2
h m							
1 20	-1.638 00	+0.054 01	+9.597 13	+9.963 07	19 15.6	+0.559 97	+0.013 98
30	1.552 10	0.058 54	9.597 12	9.963 07	21 45.5	0.559 99	0.014 00
40	1.466 20	0.063 06	9.597 11	9.963 07	24 15.5	0.560 01	0.014 02
50	1.380 30	0.067 57	9.597 11	9.963 07	26 45.5	0.560 04	0.014 05
2 0	-1.294 40	+0.072 08	+9.597 10	+9.963 07	29 15.5	+0.560 06	+0.014 07
10	1.208 49	0.076 57	9.597 10	9.963 07	31 45.5	0.560 08	0.014 09
20	1.122 58	0.081 06	9.597 09	9.963 07	34 15.5	0.560 10	0.014 11
30	1.036 67	0.085 54	9.597 09	9.963 07	36 45.5	0.560 12	0.014 13
40	0.950 76	0.090 01	9.597 08	9.963 08	39 15.5	0.560 14	0.014 15
50	0.864 84	0.094 47	9.597 07	9.963 08	41 45.5	0.560 16	0.014 17
3 0	-0.778 93	+0.098 93	+9.597 07	+9.963 08	44 15.5	+0.560 18	+0.014 19
10	0.693 01	0.103 37	9.597 06	9.963 08	46 45.5	0.560 20	0.014 21
20	0.607 09	0.107 81	9.597 06	9.963 08	49 15.5	0.560 22	0.014 23
30	0.521 17	0.112 24	9.597 05	9.963 08	51 45.4	0.560 23	0.014 24
40	0.435 25	0.116 66	9.597 04	9.963 08	54 15.4	0.560 25	0.014 26
50	0.349 33	0.121 07	9.597 04	9.963 08	56 45.4	0.560 27	0.014 28
4 0	-0.263 41	+0.125 47	+9.597 03	+9.963 08	59 15.4	+0.560 28	+0.014 29
10	0.177 49	0.129 86	9.597 03	9.963 09	61 45.4	0.560 30	0.014 31
20	0.091 57	0.134 25	9.597 02	9.963 09	64 15.4	0.560 31	0.014 32
30	-0.005 65	0.138 62	9.597 01	9.963 09	66 45.4	0.560 33	0.014 34
40	+0.080 27	0.142 99	9.597 01	9.963 09	69 15.4	0.560 34	0.014 35
50	0.166 19	0.147 35	9.597 00	9.963 09	71 45.4	0.560 35	0.014 36
5 0	+0.252 11	+0.151 70	+9.597 00	+9.963 09	74 15.4	+0.560 36	+0.014 38
10	0.338 03	0.156 04	9.596 99	9.963 09	76 45.4	0.560 38	0.014 39
20	0.423 95	0.160 37	9.596 99	9.963 09	79 15.4	0.560 39	0.014 40
30	0.509 87	0.164 70	9.596 98	9.963 09	81 45.4	0.560 40	0.014 41
40	0.595.79	0.169 01	9.596 97	9.963 10	84 15.3	0.560 41	0.014 42
50	0.681 70	0.173 32	9.596 97	9.963 10	86 45.3	0.560 42	0.014 43
6 0	+0.767 62	+0.177 62	+9.596 96	+9.963 10	89 15.3	+0.560 43	+0.014 44
10	0.853 53	0.181 91	9.596 96	9.963 10	91 45.3	0.560 43	0.014 44
20	0.939 44	0.186 19	9.596 95	9.963 10	94 15.3	0.560 44	0.014 45
30	1.025 35	0.190 46	9.596 94	9.963 10	96 45.3	0.560 45	0.014 46
40	1.111 26	0.194 72	9.596 94	9.963 10	99 15.3	0.560 46	0.014 47
50	1.197 16	0.198 97	9.596 93	9.963 10	101 45.3	0.560 46	0.014 47
7 0	+1.283 06	+0.203 22	+9.596 93	+9.963 10	104 15.3	+0.560 47	+0.014 48
10	1.368 96	0.207 45	9.596 92	9.963 11	106 45.3	0.560 47	0.014 48
20	1.454 86	0.211 68	9.596 91	9.963 11	109 15.3	0.560 48	0.014 49
30	1.540 75	0.215 90	9.596 91	9.963 11	111 45.3	0.560 48	0.014 49
40	+1.626 64	+0.220 10	+9.596 90	+9.963 11	114 15.2	+0.560 49	+0.014 50
Greenwich Mean Time.	Log x' for 1 Minute.		Log y' for 1 Minute.	Log μ' for 1 Minute.	Log Tangents of Angles of Cones.		
					Penumbra.	Shadow.	
h m							
1 0	+7.9339		+6.6581	+1.1761	7.66270	7.66053	
2 0	7.9340		6.6533	1.1761	7.66270	7.66053	
3 0	7.9341		6.6483	1.1761	7.66270	7.66053	
4 0	7.9341		6.6432	1.1761	7.66270	7.66053	
5 0	7.9341		6.6381	1.1761	7.66270	7.66053	
6 0	7.9341		6.6328	1.1761	7.66270	7.66053	
7 0	7.9340		6.6274	1.1761	7.66270	7.66054	
8 0	7.9339		+6.6218	+1.1761	7.66271	7.66054	

ANNULAR ECLIPSE



Note, - The hours of beginning and

SE OF JUNE 28TH 1908.



and ending are expressed in Greenwich Mean Time.

PATH OF THE ANNULUS DURING THE ANNULAR ECLIPSE
OF THE SUN, 1908, JUNE 28.

Greenwich Mean Time.	Northern Limit of Annulus Path.		Central Line.		Southern Limit of Annulus Path.		Duration of Annulus on Central Line.
	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	
Limits.	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	m s
2 ^h 40 ^m	+ 5 23	130 24 W.	+ 4 39.3	129 56.8 W.	+ 3 54	129 29 W.	...
	11 55	116 23	11 36.1	115 17.7	11 17	114 12	3 15.8
45	14 46	110 53	14 21.3	110 2.4	13 57	109 12	3 19.6
50	16 54	106 51	16 27.7	106 7.4	16 1	105 24	3 22.8
55	18 41	103 32	18 12.9	102 53.2	17 45	102 15	3 25.8
3 0	+ 20 12.5	100 39.4	+ 19 44.0	100 4.3	+ 19 15.5	99 29.2	3 28.7
5	21 33.9	98 5.0	21 4.7	97 32.6	20 35.5	97 0.2	3 31.4
10	22 46.6	95 43.5	22 17.0	95 13.5	21 47.4	94 43.5	3 34.1
15	23 52.5	93 31.8	23 22.5	93 3.9	22 52.5	92 36.0	3 36.7
20	24 52.5	91 27.4	24 22.1	91 1.4	23 51.7	90 35.4	3 39.2
25	25 47.3	89 28.8	25 16.5	89 4.6	24 45.7	88 40.4	3 41.6
30	+ 26 37.4	87 35.0	+ 26 6.3	87 12.4	+ 25 35.2	86 49.8	3 43.9
35	27 23.2	85 44.8	26 51.8	85 23.9	26 20.4	85 3.0	3 46.1
40	28 5.1	83 57.5	27 33.4	83 38.2	27 1.7	83 18.9	3 48.2
45	28 43.2	82 12.6	28 11.2	81 54.8	27 39.2	81 37.0	3 50.2
50	29 17.8	80 29.5	28 45.6	80 13.3	28 13.4	79 57.1	3 52.1
55	29 49.1	78 47.9	29 16.6	78 33.2	28 44.1	78 18.5	3 53.8
4 0	+ 30 17.1	77 7.3	+ 29 44.3	76 54.1	+ 29 11.5	76 40.9	3 55.4
5	30 41.9	75 27.5	30 8.9	75 15.8	29 35.9	75 4.1	3 56.8
10	31 3.6	73 48.2	30 30.4	73 38.1	29 57.2	73 28.0	3 58.0
15	31 22.2	72 9.2	30 48.8	72 0.7	30 15.4	71 52.2	3 59.0
20	31 38.0	70 30.3	31 4.3	70 23.3	30 30.6	70 16.3	3 59.9
25	31 50.7	68 51.2	31 16.8	68 45.8	30 42.9	68 40.4	4 0.5
30	+ 32 0.3	67 11.9	+ 31 26.3	67 8.1	+ 30 52.3	67 4.3	4 0.9
35	32 6.9	65 32.1	31 32.8	65 30.0	30 58.7	65 27.9	4 1.1
40	32 10.5	63 51.6	31 36.3	63 51.2	31 2.1	63 50.8	4 1.1
45	32 11.2	62 10.4	31 36.8	62 11.6	31 2.4	62 12.8	4 0.9
50	32 8.6	60 28.2	31 34.2	60 31.1	30 59.8	60 34.0	4 0.4
55	32 2.9	58 44.8	31 28.4	58 49.4	30 53.9	58 54.0	3 59.8
5 0	+ 31 53.9	57 0.0	+ 31 19.4	57 6.4	+ 30 44.9	57 12.8	3 58.9
5	31 41.6	55 13.6	31 7.1	55 21.8	30 32.6	55 30.0	3 57.8
10	31 25.9	53 25.3	30 51.4	53 35.3	30 16.9	53 45.3	3 56.5
15	31 6.5	51 34.7	30 32.1	51 46.6	29 57.7	51 58.5	3 55.1
20	30 43.4	49 41.6	30 9.1	49 55.4	29 34.8	50 9.2	3 53.4
25	30 16.4	47 45.5	29 42.2	48 1.2	29 8.0	48 16.9	3 51.6
30	+ 29 45.0	45 45.6	+ 29 11.0	46 3.4	+ 28 37.0	46 21.2	3 49.6
35	29 9.2	43 41.5	28 35.3	44 1.3	28 1.4	44 21.1	3 47.5
40	28 28.2	41 32.1	27 54.6	41 54.1	27 21.0	42 16.1	3 45.2
45	27 41.7	39 16.2	27 8.4	39 40.6	26 35.1	40 5.0	3 42.8
50	26 49.0	36 52.2	26 16.0	37 19.2	25 43.0	37 46.2	3 40.3
55	25 48.9	34 17.8	25 16.3	34 47.7	24 43.7	35 17.6	3 37.6
6 0	+ 24 40.0	31 30.0	+ 24 7.7	32 3.0	+ 23 36.0	32 36.0	3 34.7
5	23 19.0	28 23.0	22 48.0	29 0.1	22 17.0	29 37.0	3 31.7
10	21 43.0	24 48.0	21 13.5	25 31.0	20 44.0	26 14.0	3 28.5
15	19 44.0	20 28.0	19 16.6	21 18.8	18 49.0	22 10.0	3 25.0
20	17 0.0	14 33.0	16 38.0	15 40.6	16 16.0	16 48.0	3 20.8
Limits.	+ 10 46	0 39 W.	+ 10 1.0	1 8.0 W.	+ 9 16	1 36 W.	...

**BESSELIAN ELEMENTS OF THE CENTRAL ECLIPSE
OF THE SUN, 1908, DECEMBER 22-23.**

Greenwich Mean Time.	Co-ordinates of Center of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Shadow on Fundamental Plane.	
	<i>x</i>	<i>y</i>	Log sin <i>d</i>	Log cos <i>d</i>	μ	<i>l</i> ₁	<i>l</i> ₂
h m					°		
21 0	-1.566 45	-0.359 88	-9.599 74	+9.962 58	315 13.6	+0.549 62	+0.00 368
10	1.473 96	0.368 30	9.599 74	9.962 58	317 43.6	0.549 61	0.00 368
20	1.381 46	0.376 71	9.599 74	9.962 58	320 13.5	0.549 60	0.00 367
30	1.288 96	0.385 11	9.599 74	9.962 58	322 43.5	0.549 59	0.00 366
40	1.196 45	0.393 49	9.599 74	9.962 58	325 13.4	0.549 58	0.00 365
50	1.103 94	0.401 87	9.599 74	9.962 58	327 43.4	0.549 57	0.00 364
22 0	-1.011 42	-0.410 24	-9.599 74	+9.962 58	330 13.4	+0.549 56	+0.00 363
10	0.918 90	0.418 59	9.599 73	9.962 58	332 43.3	0.549 55	0.00 361
20	0.826 37	0.426 94	9.599 73	9.962 58	335 13.3	0.549 54	0.00 360
30	0.733 84	0.435 27	9.599 73	9.962 58	337 43.3	0.549 52	0.00 359
40	0.641 31	0.443 59	9.599 73	9.962 58	340 13.2	0.549 51	0.00 357
50	0.548 77	0.451 91	9.599 73	9.962 58	342 43.2	0.549 49	0.00 356
23 0	-0.456 23	-0.460 21	-9.599 73	+9.962 58	345 13.2	+0.549 48	+0.00 354
10	0.363 69	0.468 50	9.599 72	9.962 58	347 43.1	0.549 46	0.00 353
20	0.271 14	0.476 77	9.599 72	9.962 58	350 13.1	0.549 45	0.00 351
30	0.178 59	0.485 04	9.599 72	9.962 58	352 43.0	0.549 43	0.00 349
40	-0.086 04	0.493 30	9.599 72	9.962 58	355 13.0	0.549 41	0.00 347
50	+0.006 51	0.501 54	9.599 72	9.962 58	357 43.0	0.549 39	0.00 346
0 0	+0.099 06	-0.509 78	-9.599 72	+9.962 58	0 12.9	+0.549 37	+0.00 344
10	0.191 62	0.518 00	9.599 72	9.962 58	2 42.9	0.549 35	0.00 342
20	0.284 18	0.526 21	9.599 71	9.962 58	5 12.9	0.549 33	0.00 340
30	0.376 74	0.534 41	9.599 71	9.962 58	7 42.8	0.549 31	0.00 337
40	0.469 30	0.542 60	9.599 71	9.962 58	10 12.8	0.549 29	0.00 335
50	0.561 86	0.550 78	9.599 71	9.962 58	12 42.7	0.549 26	0.00 333
1 0	+0.654 42	-0.558 95	-9.599 71	+9.962 58	15 12.7	+0.549 24	+0.00 331
10	0.746 98	0.567 10	9.599 71	9.962 58	17 42.7	0.549 22	0.00 328
20	0.839 54	0.575 25	9.599 70	9.962 59	20 12.6	0.549 19	0.00 326
30	0.932 10	0.583 38	9.599 70	9.962 59	22 42.6	0.549 17	0.00 323
40	1.024 66	0.591 50	9.599 70	9.962 59	25 12.6	0.549 14	0.00 321
50	1.117 22	0.599 61	9.599 70	9.962 59	27 42.5	0.549 11	0.00 318
2 0	+1.209 78	-0.607 71	-9.599 70	+9.962 59	30 12.5	+0.549 09	+0.00 315
10	1.302 34	0.615 80	9.599 70	9.962 59	32 42.4	0.549 06	0.00 312
20	1.394 89	0.623 88	9.599 69	9.962 59	35 12.4	0.549 03	0.00 310
30	+1.487 44	-0.631 94	-9.599 69	+9.962 59	37 42.4	+0.549 00	+0.00 307

Greenwich Mean Time.	Log <i>x'</i> for 1 Minute.	Log <i>y'</i> for 1 Minute.	Log μ' for 1 Minute.	Log Tangents of Angles of Cones.	
				Penumbra.	Shadow.
h m					
21 0	+ 7.9661	- 6.9256	+ 1.1760	+ 7.677 08	+ 7.674 91
22 0	7.9662	6.9222	1.1760	7.677 08	7.674 91
23 0	7.9663	6.9188	1.1760	7.677 08	7.674 91
0 0	7.9664	6.9153	1.1760	7.677 08	7.674 91
1 0	7.9664	6.9118	1.1760	7.677 08	7.674 91
2 0	7.9664	6.9081	1.1760	7.677 08	7.674 91
3 0	+ 7.9664	- 6.9044	+ 1.1760	+ 7.677 08	+ 7.674 91

PATH OF THE ANNULUS AND SHADOW DURING THE CENTRAL
ECLIPSE OF THE SUN, 1908, DECEMBER 22-23.

Greenwich Mean Time.	Central Line.			Duration of Annulus or Totality on Central Line.
	Latitude.	Longitude from Greenwich.		
Limits.	°	°		m s
h m			Eclipse Annular.	
22 15	- 22 46.1	73 31.7 W.		0 31.7
20	29 7.6	60 29.4		0 25.4
25	32 40.3	53 57.7		0 20.6
	35 19.2	49 13.3		
30	- 37 32.1	45 16.6		0 16.5
35	39 28.1	41 46.3		0 12.8
40	41 11.6	38 32.6		0 9.5
45	42 45.6	35 29.3		0 6.5
50	44 11.4	32 32.8		0 3.8
55	45 30.2	29 40.5	Eclipse Annular.	0 1.3
23 0	- 46 42.7	26 50.4	Eclipse Total.	0 0.9
5	47 49.3	24 1.0		0 2.9
10	48 50.2	21 11.3		0 4.8
15	49 45.9	18 20.3		0 6.4
20	50 36.3	15 27.3		0 7.7
25	51 21.5	12 31.8		0 8.9
30	- 52 1.5	9 33.3		0 9.8
35	52 36.4	6 31.5		0 10.5
40	53 5.8	3 26.2		0 11.0
45	53 29.8	0 17.5 W.		0 11.3
50	53 48.3	2 54.8 E.		0 11.3
55	54 1.0	6 10.6		0 11.1
0 0	- 54 7.8	9 29.8		0 10.7
5	54 8.5	12 52.1		0 10.0
10	54 3.0	16 17.5		0 9.2
15	53 50.9	19 45.8		0 8.1
20	53 32.1	23 17.0		0 6.7
25	53 6.3	26 51.1		0 5.1
30	- 52 32.9	30 28.5		0 3.3
35	51 51.6	34 9.5	Eclipse Total.	0 1.3
40	51 1.8	37 55.1	Eclipse Annular.	0 1.0
45	50 2.5	41 47.0		0 3.6
50	48 52.5	45 47.4		0 6.5
55	47 29.9	49 59.9		0 9.7
1 0	- 45 51.6	54 31.1		0 13.3
5	43 52.0	59 32.7		0 17.4
10	41 18.6	65 30.4		0 22.4
15	37 30.7	73 52.2		0 29.2
Limits.	- 31 54.4	86 1.9 E.	Eclipse Annular.	

WASHINGTON MEAN TIME.

PHASES OF THE MOON.

New Moon.				First Quarter.				Full Moon.				Last Quarter.			
	d	h	m		d	h	m		d	h	m		d	h	m
January	3	4	35.1	January	9	20	44.6	January	17	20	28.6	January	25	21	53.0
February	1	15	28.2	February	8	11	19.2	February	16	15	57.1	February	24	10	16.0
March	2	1	48.6	March	9	4	33.8	March	17	9	20.2	March	24	19	23.3
March	31	11	53.9	April	7	23	23.2	April	15	23	47.0	April	23	1	58.4
April	29	22	24.8	May	7	18	15.0	May	15	11	24.1	May	22	7	8.9
May	29	10	6.2	June	6	11	47.8	June	13	20	46.9	June	20	12	17.8
June	27	23	23.2	July	6	3	16.7	July	13	4	39.6	July	19	18	53.4
July	27	14	8.5	August	4	16	32.1	August	11	11	50.5	August	18	4	17.2
August	26	5	50.6	September	3	3	42.5	September	9	19	15.0	September	16	17	25.1
September	24	21	51.1	October	2	13	5.4	October	9	3	55.1	October	16	10	27.1
October	24	13	38.3	October	31	21	8.0	November	7	14	49.7	November	15	6	32.8
November	23	4	44.8	November	30	4	36.1	December	7	4	35.8	December	15	4	4.2
December	22	18	41.4	December	29	12	31.6								

APOGEE, PERIGEE, AND GREATEST LIBRATION.

Apogee.		Perigee.		Greatest Libration.	
	d h		d h		d h
January	18 8.9	January	3 19.5	January	10 0.7 W.
February	14 10.0	February	1 8.6	February	7 7.6 W.
March	12 22.6	February	29 19.7	March	6 14.8 W.
April	9 17.3	March	28 22.1	April	3 16.4 W.
May	7 12.8	April	24 19.2	May	1 6.2 W.
June	4 7.4	May	19 20.3	May	27 23.6 W.
July	1 23.7	June	16 4.8	June	23 8.6 W.
July	29 10.1	July	14 7.7	July	20 18.9 W.
August	25 13.2	August	11 16.5	August	17 19.6 W.
September	21 18.9	September	9 2.7	September	15 0.8 W.
October	19 9.0	October	7 10.8	October	13 5.2 W.
November	16 4.4	November	4 7.6	November	10 3.6 W.
December	14 1.6	November	29 22.1	December	7 11.6 W.
		December	25 20.3		

FORMULÆ FOR THE LIBRATION OF THE MOON.

Let I = the inclination of the Moon's equator to the ecliptic ($=1^{\circ} 28'.8$).

Ω = the mean longitude of the Moon's ascending node, or the mean longitude of the descending node of the Moon's equator,

C = the angle at the center of the Moon's disk made by a lunar meridian with the circle of declination, counted from north to east on the apparent disk,

$\lambda, \beta, \alpha, \delta$ = the apparent longitude, latitude, right ascension, and declination of the Moon, corrected for parallax,

λ' = the selenocentric longitude of the Earth, counted on the Moon's equator from its descending node, $\delta\delta$.

$i, J, \delta\delta', \zeta$ = the quantities defined on page 284, where their values for the current year are given.

The Moon's libration in longitude and latitude may then be found, for any time, by means of the following formulæ, in connection with the tables given on pages 284 and 285:—

$$\left. \begin{aligned} u &= -0.574 \sin 2(\Omega - \lambda) \\ l &= \sin I \cos (\delta\delta - \lambda) \\ \tan B &= \tan I \sin (\delta\delta - \lambda) \\ \lambda' &= \lambda + u + l\delta \end{aligned} \right\} \text{See table, page 285.}$$

The libration in latitude $= b = B - \beta$

The libration in longitude $= l = \lambda' - \zeta$

$$\sin c = \sin i \frac{\cos (\lambda' + J - \Omega)}{\cos i} = -\sin i \frac{\cos (\alpha - \delta\delta')}{\cos i}$$

MEAN PLACES FOR 1908.0. (January 1^d.037, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Proper Motion.	Declination.	Annual Proper Motion.
		h m s	s	° ' "	"
Piazzi o. 1	6.0	0 5 36.264	+ 0.0020	— 5 45 34.40	0.000
H. A. C. 81.	6.3	0 19 47.589	— 0.0024	2 43 40.76	— 0.051
14 Ceti	5.4	0 30 49.423	+ 0.0098	1 0 39.43	— 0.059
20 Ceti	4.9	0 48 18.298	— 0.0005	— 1 38 36.82	— 0.003
26 Ceti	6.0	0 59 4.900	+ 0.0081	+ 0 52 26.12	— 0.037
33 Ceti	6.1	1 5 49.429	— 0.0010	+ 1 57 22.52	— 0.006
Lalande 2632	6.5	1 22 8.178	—	3 3 30.07	— . . .
Piazzi i. 249	6.5	1 59 59.804	+ 0.0025	7 17 40.36	— 0.037
64 Ceti	5.8	2 6 29.572	— 0.0092	8 8 22.11	— 0.107
ε Arietis	5.5	2 19 53.016	+ 0.0006	10 11 39.26	— 0.022
25 Arietis	6.5	2 22 29.686	— 0.0195	+ 9 47 25.27	— 0.200
B. F. 310	6.3	2 24 40.487	— 0.0003	9 9 18.88	— 0.003
31 Arietis	5.7	2 31 36.764	+ 0.0189	12 2 56.54	— 0.085
85 Ceti	6.3	2 37 31.589	— 0.0026	10 20 59.74	— 0.012
38 Arietis	5.2	2 39 56.673	+ 0.0081	12 3 32.60	— 0.079
μ Ceti	4.3	2 39 58.002	+ 0.0188	+ 9 43 34.22	— 0.025
W. B. ii. 1033	5.8	3 1 20.571	+ 0.0017	12 49 59.90	— 0.009
Mayer 121	6.4	3 32 37.865	+ 0.0015	15 7 44.51	— 0.003
Piazzi iii. 103	6.3	3 34 13.421	+ 0.0028	16 14 16.75	— 0.026
Mayer 136	5.9	3 47 54.239	+ 0.0085	17 3 12.93	— 0.036
B. A. C. 1239	6.3	3 55 21.423	— 0.0003	+ 17 2 14.03	— 0.061
Piazzi iii. 215	5.8	3 55 30.626	+ 0.0095	17 56 5.49	— 0.039
Piazzi iii. 249	6.1	4 2 43.281	+ 0.0032	17 5 39.83	— 0.022
ω Tauri	5.5	4 3 48.274	+ 0.0079	19 21 58.99	— 0.044
B. D. + 16°, 569	6.2	4 7 14.536	+ 0.0004	17 2 28.57	— 0.014
ω Tauri	4.8	4 11 52.105	— 0.0022	+ 20 21 9.89	— 0.055
B. D. + 18°, 624	6.0	4 15 4.162	+ 0.0055	18 31 22.11	— . . .
Piazzi iv. 53	6.1	4 16 57.916	— 0.0002	20 36 15.92	— 0.001
δ Tauri	3.9	4 17 37.646	+ 0.0076	17 19 38.23	— 0.030
B. D. + 20°, 751	5.9	4 18 6.996	+ 0.0019	20 46 5.16	— 0.031
δ Tauri	4.9	4 18 47.463	+ 0.0084	+ 17 13 53.08	— 0.039
B. A. C. 1361	6.0	4 19 35.309	+ 0.0072	18 49 50.90	— 0.060
δ Tauri	4.3	4 20 9.887	+ 0.0078	17 43 4.68	— 0.031
B. D. + 17°, 750	6.2	4 28 13.371	+ 0.0025	17 49 22.74	— 0.031
B. A. C. 1417	6.4	4 30 18.859	— 0.0028	19 41 32.84	+ 0.018
B. D. + 20°, 785	5.8	4 32 50.169	+ 0.0013	+ 20 30 1.31	— 0.010
Mayer 177	6.1	4 40 54.433	+ 0.0053	18 34 7.92	— 0.067
B. D. + 19°, 811	6.2	4 49 33.915	+ 0.0078	19 20 12.48	— 0.044
ε Tauri	4.7	4 57 35.746	+ 0.0056	21 27 32.56	— 0.049
B. D. + 21°, 755	6.3	4 58 52.654	+ 0.0028	21 8 57.49	— 0.034
Mayer 198	6.3	5 0 6.590	— 0.0036	+ 19 40 50.14	— 0.018
ζ Tauri	5.2	5 2 21.680	— 0.0033	20 17 50.64	— 0.054
105 Tauri	6.0	5 2 25.300	+ 0.0004	21 35 0.83	— 0.007
107 Tauri	6.5	5 3 24.577	+ 0.0002	19 44 27.58	— 0.015
108 Tauri	6.2	5 9 55.816	— 0.0005	22 10 48.34	— 0.025
η Tauri	5.1	5 13 44.919	+ 0.0021	+ 22 0 6.95	— 0.083
B. A. C. 1639	6.2	5 13 48.100	— 0.0014	20 2 19.42	— 0.029
B. A. C. 1651	6.5	5 15 30.535	+ 0.0005	19 43 18.49	— 0.024
η Tauri	4.8	5 22 6.508	+ 0.0006	21 51 32.19	— 0.010
Piazzi v. 125	6.1	5 28 10.676	— 0.0001	20 24 34.14	— 0.013
121 Tauri	5.1	5 29 49.934	+ 0.0010	+ 23 58 44.24	— 0.031
ζ Tauri	3.0	5 32 8.757	+ 0.0006	21 5 13.02	— 0.032
Piazzi v. 184	6.5	5 36 30.174	— 0.0020	22 36 54.20	+ 0.018
Piazzi v. 192	6.0	5 37 44.305	+ 0.0011	23 9 39.99	— 0.042
132 Tauri	5.0	5 43 22.175	0.0000	24 32 14.14	— 0.023
B. D. + 24°, 1033	5.8	5 51 18.090	—	+ 24 14 12.28	— . . .
141 Tauri	6.3	5 56 8.266	— 0.0009	22 23 57.14	— 0.011
1 Geminorum	4.1	5 58 31.678	+ 0.0002	+ 23 16 7.87	— 0.109

MEAN PLACES FOR 1908.0 (January 1 ^d .037, Washington.)						
Name of Star.	Magni- tude.	Right Ascension.	Annual Proper Motion.	Declination.	Annual Proper Motion.	
		h m s	s	° ' "	"	
B. A. C. 1970	6.0	6 3 59.710	+ 0.0021	+ 22 12 18.92	- 0.040	
3 Geminorum	5.6	6 4 8.849	+ 0.0014	23 7 44.79	+ 0.001	
5 Geminorum	5.9	6 5 53.814	+ 0.0011	24 26 27.85	- 0.061	
6 Geminorum	6.3	6 6 44.499	+ 0.0007	22 55 47.48	- 0.013	
8 Geminorum	6.1	6 10 41.793	- 0.0005	24 0 0.87	- 0.026	
9 Geminorum	6.2	6 11 21.973	+ 0.0004	+ 23 46 21.37	- 0.008	
B. A. C. 2064	6.0	6 19 57.456	- 0.0004	23 22 43.22	+ 0.015	
Piazz i vi, 165	6.5	6 31 48.869	.....	24 40 3.70	.....	
d Geminorum	5.2	6 46 2.309	+ 0.0003	21 52 12.80	- 0.045	
B. A. C. 2238	5.8	6 46 24.961	- 0.0006	23 42 39.62	- 0.021	
37 Geminorum	5.7	6 49 39.259	- 0.0028	+ 25 29 28.93	- 0.014	
ω Geminorum	5.2	6 56 48.511	- 0.0003	24 20 49.95	0.000	
44 Geminorum	5.9	6 59 46.121	0.0000	22 46 32.82	- 0.020	
48 Geminorum	5.8	7 6 51.061	- 0.0009	24 16 59.34	- 0.041	
52 Geminorum	6.1	7 9 4.444	+ 0.0038	25 2 43.62	- 0.086	
A Geminorum	5.1	7 17 52.049	- 0.0051	+ 25 13 40.46	- 0.014	
58 Geminorum	6.0	7 17 56.489	- 0.0022	23 7 22.18	- 0.054	
B. A. C. 2455	6.4	7 21 24.117	- 0.0219	21 43 12.29	- 0.022	
63 Geminorum	5.3	7 22 16.802	- 0.0035	21 38 2.68	- 0.110	
B. D. + 23°, 1744	6.4	7 27 19.902	- 0.0010	23 5 3.29	- 0.007	
Mayer 319	6.3	7 32 40.394	.....	+ 24 34 2.02	.....	
B. A. C. 2514	6.0	7 33 38.079	.....	24 25 54.05	.....	
B. D. + 23°, 1780	6.3	7 35 28.162	+ 0.0011	23 13 55.55	+ 0.007	
B. A. C. 2544	6.3	7 37 53.532	- 0.0014	22 37 0.85	+ 0.026	
κ Geminorum	3.6	7 38 53.734	- 0.0014	24 37 8.89	- 0.050	
82 Geminorum	6.3	7 43 3.662	- 0.0010	+ 23 22 9.05	- 0.001	
B. D. + 23°, 1866	6.4	7 55 31.307	- 0.0003	23 50 11.08	- 0.047	
μ ¹ Cancr i	6.2	8 0 51.343	- 0.0009	22 53 54.99	- 0.015	
μ ² Cancr i	5.5	8 2 21.138	+ 0.0019	21 50 57.04	- 0.084	
B. D. + 23°, 1913	6.4	8 8 14.767	- 0.0017	23 24 54.02	- 0.022	
Piazz i viii, 42	6.0	8 14 59.169	+ 0.0052	+ 21 2 17.91	- 0.063	
39 Cancr i	6.5	8 34 49.017	- 0.0027	20 19 58.94	- 0.016	
40 Cancr i	6.5	8 34 54.175	- 0.0014	20 17 48.06	- 0.003	
B. A. C. 2919	6.5	8 35 5.259	- 0.0048	19 59 44.67	- 0.010	
ε Cancr i	6.3	8 35 10.588	- 0.0007	19 52 14.35	- 0.027	
B. A. C. 2991	6.1	8 45 31.024	- 0.0011	+ 19 10 33.71	- 0.001	
Bradley 1299	6.1	9 8 22.135	- 0.0007	21 39 45.41	- 0.013	
8 Leonis	5.9	9 31 58.158	- 0.0006	16 51 1.44	- 0.015	
B. D. + 19°, 2251	6.5	9 39 23.216	+ 0.0020	19 17 12.59	- 0.077	
B. D. + 16°, 2077	6.3	10 0 41.596	- 0.0023	16 12 20.20	+ 0.017	
η Leonis	3.6	10 2 19.039	- 0.0022	+ 17 12 41.82	- 0.004	
37 Leonis	5.5	10 11 44.542	- 0.0013	14 11 14.66	- 0.014	
42 Leonis	6.1	10 16 53.585	- 0.0017	15 26 22.58	- 0.027	
i Leonis	5.8	10 27 17.218	- 0.0024	14 36 35.00	+ 0.022	
k Leonis	5.5	10 41 33.021	- 0.0089	14 40 50.42	- 0.064	
l Leonis	4.1	11 19 7.732	+ 0.0103	+ 11 2 10.00	- 0.043	
ω Virginis	5.4	11 33 43.016	- 0.0005	8 38 36.49	- 0.012	
ξ Virginis	4.8	11 40 32.568	+ 0.0045	8 46 10.40	- 0.034	
r Virginis	4.2	11 41 7.875	- 0.0014	7 2 42.01	- 0.146	
A ¹ Virginis	5.1	11 43 11.355	- 0.0038	8 45 24.76	+ 0.004	
B. D. + 6°, 2543	6.5	11 59 2.751	- 0.0095	+ 6 4 20.09	- 0.076	
11 Virginis	5.6	12 5 22.128	- 0.0100	6 19 7.03	+ 0.026	
γ Virginis	5.1	12 15 40.621	- 0.0198	3 49 29.56	- 0.172	
Piazz i xii, 142	5.9	12 33 40.883	- 0.0042	+ 2 21 39.76	- 0.021	
80 Virginis	5.6	13 30 44.036	+ 0.0010	- 4 55 39.79	+ 0.075	
Piazz i xiii, 174	6.4	13 39 6.905	- 0.0049	- 5 2 8.42	- 0.025	
u Virginis	6.5	13 43 29.100	- 0.0032	6 22 42.85	- 0.033	
Bradley 1820	6.1	13 50 8.553	- 0.0121	- 7 36 22.98	- 0.048	

MEAN PLACES FOR 1908.0. (January 1^d.037, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Proper Motion.	Declination.	Annual Proper Motion.
		h m s	s	° ' "	"
Piazzii xiii, 287	6.5	13 59 29.095	- 0.0026	8 48 56.81	+ 0.006
95 Virginis	5.4	14 1 50.768	- 0.0098	8 52 28.82	+ 0.011
Lalande 26147	6.5	14 13 7.387	+ 0.0116	7 6 39.89	- 0.232
B. A. C. 4828	6.2	14 32 6.036	- 0.0591	11 54 51.66	+ 0.385
B. D. -12°, 4134	6.4	14 42 53.612	+ 0.0013	12 27 10.48	- 0.083
51 Libræ	5.7	14 49 23.042	- 0.0048	- 11 31 23.93	- 0.020
52 Libræ	5.7	14 51 46.429	- 0.0006	11 2 19.58	- 0.001
17 Libræ	6.4	14 53 14.155	- 0.0019	10 47 8.18	- 0.021
18 Libræ	5.9	14 53 54.915	- 0.0079	10 46 28.92	- 0.077
01 Libræ	6.2	15 15 52.679	+ 0.0019	15 13 0.92	+ 0.024
53 Libræ	5.9	15 23 3.949	+ 0.0006	- 16 23 46.35	- 0.043
53 Libræ	6.0	15 25 28.851	+ 0.0012	16 17 38.89	- 0.007
54 Libræ	5.6	15 27 43.231	- 0.0012	16 32 29.21	- 0.033
7 Libræ	4.1	15 30 22.688	+ 0.0047	14 28 58.93	+ 0.006
Bradley 1987	6.5	15 38 15.224	- 0.0009	14 44 54.90	- 0.115
7 Libræ	5.5	15 38 53.735	- 0.0028	- 15 22 48.71	- 0.079
8 Libræ	4.4	15 48 35.103	+ 0.0066	16 27 35.31	+ 0.119
49 Libræ	5.4	15 55 9.757	- 0.0435	16 15 45.70	- 0.390
8 Scorpii	5.0	16 0 5.559	- 0.0011	19 33 1.25	- 0.028
B. D. -17°, 4502	6.4	16 4 37.271	- 0.0056	18 5 46.87	- 0.007
12 Scorpii	3.9	16 6 38.736	- 0.0017	- 19 13 20.08	- 0.041
B. A. C. 5408	6.4	16 9 20.538	- 0.0095	18 17 59.84	- 0.132
B. A. C. 5436	6.2	16 13 44.350	+ 0.0002	19 59 37.88	- 0.008
ψ Ophiuchi	4.6	16 18 43.091	- 0.0014	19 49 21.26	- 0.060
χ Ophiuchi	4.9	16 21 41.410	- 0.0006	18 14 52.57	- 0.022
ω Ophiuchi	4.5	16 26 40.877	+ 0.0014	- 21 16 12.03	+ 0.026
B. A. C. 5567	6.5	16 35 9.016	+ 0.0008	20 13 46.27	+ 0.037
Bradley 2115	5.5	16 36 29.119	+ 0.0021	19 44 54.42	+ 0.045
Mayer 679	5.9	16 47 59.237	- 0.0032	20 15 43.65	- 0.040
B. A. C. 5700	6.1	16 51 39.559	- 0.0004	19 23 40.85	- 0.015
B. A. C. 5746	6.2	16 59 18.262	+ 0.0002	- 20 21 56.30	- 0.013
Bradley 2162	6.3	17 0 42.115	- 0.0022	21 26 15.22	- 0.083
ε Ophiuchi	4.4	17 15 29.368	+ 0.0172	21 0 52.08	- 0.198
B. A. C. 5866	5.9	17 19 11.867	- 0.0008	21 21 22.87	- 0.045
α Ophiuchi	4.8	17 25 48.098	0.0000	23 53 31.21	- 0.030
52 Ophiuchi	6.4	17 29 46.379	- 0.0007	- 21 58 55.58	- 0.004
58 Ophiuchi	4.8	17 37 55.015	- 0.0062	21 38 20.30	- 0.052
4 Sagittarii	4.8	17 54 10.516	+ 0.0001	23 48 29.63	- 0.058
B. A. C. 6088	5.7	17 56 19.932	- 0.0014	22 46 42.43	- 0.044
7 Sagittarii	5.5	17 57 12.807	- 0.0003	24 16 55.18	- 0.007
9 Sagittarii	6.0	17 58 13.942	- 0.0006	- 24 21 47.08	- 0.006
B. A. C. 6125	6.2	18 1 40.311	+ 0.0006	21 27 13.31	- 0.003
Bradley 2276	5.2	18 6 6.528	+ 0.0018	23 43 13.84	- 0.043
14 Sagittarii	5.6	18 8 44.265	- 0.0012	21 44 17.36	- 0.023
Lalande 33732	6.4	18 15 51.593	...	24 57 25.63	...
24 Sagittarii	5.7	18 28 16.290	- 0.0002	- 24 6 5.37	- 0.020
Bradley 2332	5.7	18 32 23.879	- 0.0022	21 28 28.23	- 0.100
Bradley 2335	5.8	18 32 54.956	- 0.0015	23 35 2.00	- 0.020
26 Sagittarii	6.1	18 36 14.979	+ 0.0021	23 55 10.54	- 0.023
Piazzii xviii, 155	5.7	18 39 10.251	- 0.0008	25 6 14.18	- 0.041
28 Sagittarii	5.6	18 40 47.759	+ 0.0015	- 22 29 19.94	+ 0.010
30 Sagittarii	6.2	18 45 18.636	- 0.0041	22 16 4.27	- 0.024
33 Sagittarii	5.8	18 48 30.197	- 0.0008	21 28 22.43	- 0.015
12 Sagittarii	5.0	18 48 36.960	+ 0.0001	22 51 31.05	- 0.022
12 Sagittarii	5.1	18 49 33.467	+ 0.0069	22 47 12.12	- 0.024
Piazzii xviii, 225	5.9	18 50 26.461	- 0.0010	- 23 17 29.35	- 0.021
B. A. C. 6465	6.4	18 52 42.098	...	24 59 59.78	...
B. A. C. 6479	6.4	18 54 46.099	...	- 25 4 13.89	...

MEAN PLACES FOR 1908.0. (January 1^d.037, Washington.)

Name of Star.	Magni- tude.	Right Ascension.	Annual Proper Motion.	Declination.	Annual Proper Motion.
		h m s	s	° ' "	"
B. A. C. 6485	6.3	18 56 5.032	+ 0.0005	— 22 49 31.44	+ 0.009
B. A. C. 6490	5.8	18 56 49.968	+ 0.0002	24 58 26.78	— 0.172
o Sagittarii	3.9	18 59 10.217	+ 0.0050	21 52 36.46	— 0.064
Mayer 787	6.1	19 2 37.359	.....	24 48 5.26	.....
Lalande 35745	6.5	19 3 11.000	— 0.0012	23 20 8.74	— 0.058
B. A. C. 6561	6.4	19 6 58.205	— 0.0003	— 21 48 41.57	— 0.040
ψ Sagittarii	4.8	19 9 54.005	+ 0.0025	25 24 57.02	— 0.035
B. A. C. 6576	6.1	19 9 56.970	+ 0.0072	24 20 11.44	— 0.079
Piazzi xix, 61	5.5	19 15 7.376	— 0.0016	22 34 27.03	+ 0.026
χ ¹ Sagittarii	4.9	19 19 40.660	+ 0.0033	24 41 15.70	— 0.063
χ ³ Sagittarii	5.5	19 19 55.634	— 0.0017	— 24 8 34.79	+ 0.001
50 Sagittarii	5.5	19 20 49.976	+ 0.0019	21 57 33.39	+ 0.001
B. A. C. 6671	6.1	19 25 26.493	+ 0.0026	21 30 14.42	— 0.028
h ¹ Sagittarii	5.8	19 30 26.587	+ 0.0004	24 55 15.32	— 0.005
h ² Sagittarii	4.7	19 31 6.579	+ 0.0044	25 5 13.99	— 0.027
53 Sagittarii	6.3	19 34 17.832	— 0.0004	— 23 38 14.84	— 0.037
Bradley 2488	6.1	19 34 35.397	+ 0.0018	23 38 24.48	— 0.031
B. A. C. 6814	6.3	19 48 47.306	— 0.0095	24 10 13.56	— 0.438
B. A. C. 6864	6.1	19 55 55.946	+ 0.0010	22 59 26.21	— 0.005
B. A. C. 6878	6.5	19 58 17.302	— 0.0019	22 51 14.15	+ 0.052
4 Capricorni	5.7	20 12 37.146	+ 0.0012	— 22 5 40.50	— 0.032
Piazzi xx, 146	6.2	20 24 7.552	+ 0.0003	22 41 49.27	— 0.027
17 Capricorni	5.8	20 40 50.079	+ 0.0011	21 50 55.74	— 0.014
20 Capricorni	6.2	20 54 22.591	+ 0.0012	19 23 32.56	— 0.020
γ Capricorni	4.8	20 59 10.259	— 0.0026	20 13 9.60	— 0.047
χ Capricorni	5.3	21 3 17.561	+ 0.0013	— 21 33 49.11	— 0.059
27 Capricorni	6.1	21 4 17.519	+ 0.0085	20 55 34.27	— 0.123
φ Capricorni	5.3	21 10 23.797	0.0000	21 2 2.10	0.000
30 Capricorni	5.4	21 12 47.856	+ 0.0015	18 22 15.55	— 0.002
31 Capricorni	6.3	21 13 6.921	+ 0.0031	17 50 54.82	+ 0.006
B. A. C. 7463	6.5	21 24 49.875	+ 0.0019	— 19 32 58.01	— 0.027
37 Capricorni	5.7	21 29 41.225	— 0.0016	20 29 41.24	+ 0.025
ε Capricorni	4.7	21 31 55.849	0.0000	19 52 43.05	0.000
γ Capricorni	3.7	21 34 59.729	+ 0.0129	17 4 41.34	— 0.018
κ Capricorni	4.8	21 37 31.349	+ 0.0094	19 17 9.38	— 0.006
δ Capricorni	2.9	21 41 57.868	+ 0.0176	— 16 32 42.36	— 0.298
B. D. — 17°, 6389	6.5	21 45 9.407	— 0.0004	17 16 28.18	— 0.054
B. D. — 19°, 6176	6.1	21 46 35.363	.....	19 3 7.14	.....
B. A. C. 7665	6.4	21 57 8.052	+ 0.0060	18 20 44.00	— 0.090
29 Aquarii	6.5	21 57 24.525	+ 0.0008	17 24 29.16	+ 0.009
39 Aquarii	6.2	22 7 28.177	+ 0.0016	— 14 38 49.76	— 0.044
45 Aquarii	6.1	22 14 4.573	+ 0.0051	13 45 56.86	— 0.002
50 Aquarii	5.9	22 19 31.475	+ 0.0034	13 59 45.33	+ 0.013
Bradley 2961	6.2	22 25 6.469	+ 0.0129	13 23 11.43	— 0.019
56 Aquarii	6.1	22 25 21.624	+ 0.0022	15 3 22.29	— 0.034
τ ¹ Aquarii	5.6	22 42 49.766	+ 0.0024	— 14 32 29.77	— 0.014
τ ² Aquarii	4.4	22 44 43.343	— 0.0008	14 4 41.95	— 0.033
74 Aquarii	5.8	22 48 38.143	+ 0.0013	12 6 21.36	0.000
B. A. C. 8004	6.3	22 54 45.034	— 0.0026	13 33 49.49	+ 0.034
B. D. — 11°, 6032	6.3	23 9 52.567	.....	11 11 19.15	.....
ψ ¹ Aquarii	4.5	23 11 4.361	+ 0.0250	— 9 35 20.29	— 0.005
ψ ² Aquarii	4.6	23 13 7.378	+ 0.0012	9 41 5.20	— 0.002
ψ ³ Aquarii	5.2	23 14 10.603	+ 0.0027	10 6 49.98	— 0.001
B. D. — 10°, 6120	6.3	23 24 15.285	.....	9 46 19.87	.....
B. A. C. 8214	6.5	23 30 47.346	— 0.0005	7 58 25.35	+ 0.018
Mayer 1012	6.3	23 43 48.877	+ 0.0009	— 6 53 28.87	— 0.023
30 Piscium	4.7	23 57 14.518	+ 0.0030	— 6 31 31.27	— 0.037

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	l^*	x^*	y^*	N	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
B. A. C. 5567	6.5	-2.38	+7.3	-20 13.6	1 0 51.0	+2 55.8	+1.2333	0.5934	-0.1334	+70	+45
Bradley 2115	5.5	2.38	+7.1	19 44.8	1 22.8	+3 26.4	+0.6826	0.5939	-0.1323	+69	0
NEW MOON.											
30 Capricorni	5.4	2.24	-8.4	18 22.4	5 8 30.4	+6 14.6	-0.5801	0.6015	+0.1357	-4	-79
31 Capricorni	6.3	-2.24	-8.3	-17 51.1	8 37.8	+6 21.7	-1.0779	0.6013	+0.1360	-36	-90
B. A. C. 7463	6.5	2.22	9.2	19 33.1	13 11.4	+10 44.4	+1.2405	0.5978	0.1455	+70	+45
7 Capricorni	3.7	2.14	9.2	17 4.8	17 11.4	-9 25.2	-0.6001	0.5948	0.1534	-3	-81
6 Capricorni	2.9	2.10	9.4	16 32.8	19 57.4	-6 45.6	-0.6960	0.5927	0.1586	-8	-90
B.D.-17°, 6389	6.5	2.10	9.7	17 16.6	21 13.8	-5 32.2	+0.2290	0.5916	0.1609	+43	-26
29 Aquarii	6.5	-2.04	-10.2	-17 24.7	6 2 9.6	-0 48.0	+1.1777	0.5876	+0.1695	+73	+36
39 Aquarii	6.2	1.96	10.0	14 39.0	6 15.5	+3 8.6	-0.8533	0.5842	0.1762	-16	-90
45 Aquarii	6.1	1.92	10.0	13 46.1	8 58.4	+5 45.4	-1.2463	0.5820	0.1804	-48	-90
50 Aquarii	5.9	1.90	10.3	13 59.9	11 13.8	+7 55.6	-0.6077	0.5801	0.1837	0	-81
Bradley 2961	6.2	1.86	10.4	13 23.4	13 33.3	+10 9.9	-0.7847	0.5782	0.1869	-10	-90
56 Aquarii	6.1	-1.88	-10.7	-15 3.5	13 39.7	+10 16.1	+0.8997	0.5781	+0.1871	+75	+13
74 Aquarii	5.8	1.73	10.7	12 6.5	23 31.4	-4 13.8	-0.1404	0.5702	0.1992	+26	-46
B.D.-11°, 6032	6.3	1.61	11.0	11 11.5	7 8 45.6	+4 40.7	+0.8231	0.5631	0.2083	+79	+7
ψ ¹ Aquarii	4.5	1.59	10.6	9 35.5	9 17.2	+5 11.2	-0.6790	0.5627	0.2087	-1	-88
ψ ² Aquarii	4.6	1.58	10.7	9 41.3	10 11.5	+6 3.6	-0.3936	0.5620	0.2095	+15	-62
ψ ³ Aquarii	5.2	-1.58	-10.8	-10 7.0	10 39.4	+6 30.4	+0.1370	0.5616	+0.2099	+43	-31
B.D.-10°, 6120	6.3	1.52	11.0	9 46.5	15 8.3	+10 50.1	+0.7418	0.5585	0.2133	+79	+2
B. A. C. 8214	6.5	1.48	10.5	7 58.6	18 4.3	-10 20.0	-0.4502	0.5565	0.2153	+12	-66
Mayer 1012	6.3	1.40	10.4	6 53.6	23 58.7	-4 37.7	-0.2677	0.5524	0.2187	+23	-54
30 Piscium	4.7	1.32	10.6	6 31.7	8 6 9.1	+1 20.3	+0.7193	0.5488	0.2215	+83	0
33 Piscium	4.7	-1.30	-10.5	6 13.5	7 43.3	+2 51.4	+0.7584	0.5479	+0.2220	+79	+3
Piazzi o, 1	6.0	1.27	10.4	5 45.7	10 2.2	+5 5.6	+0.8015	0.5466	0.2227	+84	+5
B. A. C. 81	6.3	1.18	9.6	2 43.8	16 41.9	+11 32.2	-0.8191	0.5430	0.2243	-7	-90
20 Ceti	4.9	1.02	9.5	-1 38.8	9 6 18.9	+0 43.0	+1.1232	0.5371	0.2246	+88	+27
26 Ceti	6.0	0.96	8.7	+0 52.3	11 31.9	+5 46.1	-0.3199	0.5355	0.2239	+21	-57
33 Ceti	6.1	-0.92	-8.3	+1 57.2	14 48.8	+8 56.6	-0.7144	0.5343	+0.2231	0	-87
7 Piscium	5.1	0.88	7.9	3 7.7	18 20.7	-11 37.9	-1.1550	0.5334	0.2222	-30	-87
Lalande 2632	6.5	0.83	8.0	3 3.4	22 47.9	-7 19.1	-0.9953	0.5323	0.2207	+33	-44
1 Piscium	4.6	0.75	7.3	5 1.2	10 5 56.6	-0 23.7	-0.5921	0.5310	0.2176	+7	-76
Piazzi i, 249	6.5	0.63	6.6	7 17.7	17 30.3	+10 48.5	-0.5147	0.5298	0.2109	+11	-69
64 Ceti	5.8	-0.60	-6.4	+8 8.3	20 43.8	-10 4.0	-0.7348	0.5297	+0.2086	-1	-81
ε ¹ Ceti	4.5	0.59	6.2	8 24.8	21 32.3	-9 17.0	-0.8594	0.5297	0.2081	-9	-82
25 Arietis	6.5	0.52	5.7	9 47.3	11 4 0.6	-2 21.7	-0.8584	0.5295	0.2026	-9	-80
ε ² Ceti	4.5	0.51	6.3	8 2.8	5 3.6	-1 59.6	+1.0754	0.5295	0.2022	+90	+26
B. F. 310	6.3	0.50	5.9	9 9.2	5 45.6	-1 18.9	+0.0370	0.5295	0.2017	+41	-34
85 Ceti	6.3	-0.44	-5.5	+10 20.9	12 8.5	+4 52.3	+0.0309	0.5299	+0.1960	+40	-34
μ Ceti	4.3	0.42	5.7	9 43.5	13 21.1	+6 2.6	+0.9350	0.5301	0.1949	+90	+17
W. B. ii, 1033	5.8	0.32	4.7	12 49.9	23 56.3	-7 41.8	-0.3890	0.5313	0.1842	+17	-57
Mayer 121	6.4	0.18	4.0	15 7.7	12 15 20.1	+7 13.2	-0.1695	0.5339	0.1659	+29	-41
Piazzi iii, 103*	6.3	0.17	3.6	16 14.2	16 6.9	+7 58.5	-1.2417	0.5340	0.1649	+43	-74
Mayer 136	5.9	-0.11	-3.4	+17 3.2	22 47.7	-9 33.3	-1.0573	0.5356	+0.1560	-25	-73
B. A. C. 1239	6.3	0.08	3.4	17 2.2	13 2 25.3	-6 2.6	-0.4843	0.5364	0.1509	+12	-59
Piazzi iii, 249	6.1	0.05	3.4	17 5.6	5 59.6	-2 35.0	-0.0168	0.5373	0.1458	+38	-30
B.D.+16°, 569	6.2	-0.03	3.4	17 2.4	8 10.9	-0 27.9	+0.3566	0.5378	0.1425	+61	-10
B.D.+18°, 624	6.0	0.00	3.1	18 31.3	11 57.6	+3 11.6	-0.7314	0.5387	0.1368	-3	-71
δ ¹ Tauri	3.9	+0.01	3.4	+17 19.6	13 11.5	+4 23.2	+0.7408	0.5391	+0.1349	+90	+12
δ ² Tauri	4.9	0.02	3.4	17 13.8	13 45.2	+4 55.8	+0.9208	0.5392	0.1341	+90	+23
B. A. C. 1361	6.0	0.02	3.0	18 49.8	14 8.2	+5 18.0	-0.7741	0.5393	0.1335	-5	-71
δ ³ Tauri	4.3	0.02	3.3	17 43.0	14 24.8	+5 34.1	+0.4780	0.5393	0.1330	+70	-3
γ Tauri	3.6	0.04	3.0	18 58.6	15 53.6	+7 0.1	-0.7020	0.5396	0.1307	-1	-71
B.D.-17°, 750	6.2	+0.05	3.3	+17 49.3	18 17.0	+9 18.9	+0.8674	0.5403	+0.1260	+90	-21

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.											
JANUARY.											
THE STAR'S					AT CONJUNCTION IN R. A.						Limiting
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle. <i>H</i>	<i>Y'</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		<i>s</i>	<i>"</i>	<i>°</i>	<i>d</i> <i>h</i> <i>m</i>	<i>h</i> <i>m</i>				<i>°</i>	<i>'</i>
B. A. C. 1417	6.4	+0.06	-2.8	+19 41.5	13 19 17.2	+10 17.2	-1.0508	0.5405	+0.1253	-25	-70
Mayer 177	6.1	0.10	3.1	18 34.1	14 0 21.1	- 8 48.6	+0.7929	0.5418	0.1170	+90	+17
<i>i</i> Tauri	5.2	0.12	3.1	18 41.0	2 46.5	- 6 27.9	+0.9462	0.5423	0.1130	+90	+27
B.D. +19°, 811	6.2	0.13	3.0	19 20.2	4 28.6	- 4 49.2	+0.4204	0.5428	0.1101	+66	- 3
B.D. +21°, 755	6.3	0.17	2.6	21 8.9	8 53.9	- 0 32.4	-1.0993	0.5438	0.1024	-30	-69
Mayer 198	6.3	+0.17	-2.9	+19 40.8	9 28.9	+ 0 1.5	+0.5733	0.5439	+0.1015	+79	- 6
<i>i</i> Tauri	5.2	0.18	2.8	20 17.8	10 32.9	+ 1 3.3	+0.0030	0.5442	0.0996	+39	-24
107 Tauri	6.5	0.18	2.9	19 44.4	11 2.7	+ 1 32.2	+0.6636	0.5443	0.0987	+90	+11
B. A. C. 1639	6.2	0.21	2.9	20 2.3	15 57.3	+ 6 17.2	+0.8004	0.5453	0.0900	+90	+20
B. A. C. 1651	6.5	0.22	2.9	19 43.3	16 45.6	+ 7 3.9	+1.2212	0.5454	0.0885	+90	+54
<i>"</i> Tauri	4.8	+0.24	-2.6	+21 51.5	19 52.0	+10 4.4	-0.8650	0.5461	+0.0828	-12	-68
Piazzi v, 125	6.1	0.25	2.9	20 24.5	22 43.2	-11 10.2	+0.9605	0.5466	0.0776	+90	+32
<i>c</i> Tauri	3.0	0.27	2.8	21 5.2	15 0 35.0	- 9 22.1	+0.3554	0.5469	0.0741	+61	- 3
Piazzi v, 184	6.5	0.28	2.5	22 36.9	2 37.6	- 7 23.5	-1.1824	0.5473	0.0703	-40	-67
141 Tauri	6.3	0.33	2.7	22 23.9	11 48.5	+ 1 29.3	-0.3805	0.5486	0.0527	+17	-42
B. A. C. 1970	6.0	+0.35	-2.8	+22 12.3	15 28.4	+ 5 1.9	+0.0141	0.5491	+0.0456	+39	-18
<i>3</i> Geminorum	5.6	0.35	2.6	23 7.7	15 32.6	+ 5 6.0	-1.0042	0.5491	0.0455	-23	-67
<i>6</i> Geminorum	6.3	0.36	2.7	22 55.7	16 45.2	+ 6 16.3	-0.7305	0.5492	0.0431	- 4	-67
<i>7</i> Geminorum	3.5	0.36	2.7	22 32.0	17 57.4	+ 7 26.0	-0.2423	0.5492	0.0408	+24	-32
<i>μ</i> Geminorum	3.2	0.38	2.8	22 33.6	21 42.8	+11 4.0	-0.1334	0.5495	0.0334	+31	-25
B. A. C. 2064	6.0	+0.39	-2.7	+23 22.7	22 54.4	-11 46.8	-0.9997	0.5495	+0.0311	-23	-67
<i>d</i> Geminorum	5.2	0.42	3.1	21 52.2	16 11 2.3	- 0 2.9	+0.9022	0.5498	0.0069	+90	+35
B. A. C. 2238	5.8	0.43	2.9	23 42.6	11 12.8	+ 0 7.2	-1.1379	0.5498	+0.0066	-36	-66
NEPTUNE				21 57.9	16 1.7	+ 4 46.5	+0.8069	0.5509	-0.0031	+90	+29
44 Geminorum	5.9	0.44	3.1	22 46.5	17 25.7	+ 6 7.8	-0.0983	0.5495	0.0058	+33	-21
<i>d</i> Geminorum	3.5	+0.46	-3.2	+22 9.1	17 0 21.5	-11 10.1	+0.5063	0.5491	-0.0195	+73	+11
58 Geminorum	6.0	0.46	3.2	23 7.3	1 54.2	- 9 40.5	-0.6039	0.5489	0.0226	+ 4	-55
B. A. C. 2455	6.4	0.46	3.3	21 43.2	3 31.3	- 8 6.6	+0.9152	0.5487	0.0257	+90	+34
63 Geminorum	5.3	0.46	3.3	21 38.0	3 55.9	- 7 42.9	+1.0000	0.5487	0.0265	+90	+40
B.D. +23°, 1744	6.4	0.47	3.3	23 5.0	6 17.7	- 5 25.7	-0.6792	0.5483	0.0312	0	-63
B.D. +23°, 1780	6.3	+0.47	-3.3	+23 13.9	10 6.5	- 1 44.5	-0.9768	0.5478	-0.0386	-21	-67
B. A. C. 2544	6.3	0.47	3.4	22 37.0	11 14.7	- 0 38.5	-0.3384	0.5475	0.0408	+19	-38
<i>μ</i> ¹ Cancri	6.2	0.47	3.6	22 53.9	22 3.9	+ 9 49.5	-1.2050	0.5454	0.0614	-44	-67
<i>μ</i> ² Cancri	5.5	0.47	3.6	21 50.9	22 46.4	+10 30.6	-0.0821	0.5453	0.0627	+34	-25
Piazzi viii, 42	6.0	0.46	3.6	21 2.2	18 4 46.2	- 7 41.1	+0.4103	0.5438	0.0737	+65	0
<i>η</i> Cancri	5.4	+0.46	-3.7	+20 45.2	10 41.5	- 1 57.2	+0.2580	0.5421	-0.0844	+54	- 9
39 Cancri	6.5	0.45	3.7	20 19.9	14 15.2	+ 1 29.6	+0.4146	0.5412	0.0906	+65	- 2
40 Cancri	6.5	0.45	3.7	20 17.7	14 17.7	+ 1 32.0	+0.4513	0.5412	0.0907	+68	0
B. A. C. 2919	6.5	0.45	3.7	19 59.7	14 23.0	+ 1 37.2	+0.7778	0.5411	0.0908	+90	+19
<i>c</i> Cancri	6.3	0.45	3.7	19 52.2	14 25.6	+ 1 39.7	+0.9131	0.5411	0.0909	+90	+28
B. A. C. 2991	6.1	+0.44	-3.7	+19 10.5	19 24.6	+ 6 29.2	+1.2109	0.5395	-0.0995	+90	+52
8 Leonis	5.9	0.36	3.6	16 51.0	19 18 9.9	+ 4 31.7	+1.1137	0.5318	0.1352	+90	+38
B.D. +16°, 2077	6.3	0.30	3.6	16 12.3	20 8 33.6	- 5 31.0	-0.2600	0.5270	0.1546	+24	-45
37 Leonis	5.5	0.27	3.2	14 11.2	14 9.8	- 0 4.9	+1.0898	0.5252	0.1614	+90	+32
42 Leonis	6.1	0.25	3.4	15 26.3	16 47.3	+ 2 27.9	-0.7247	0.5243	0.1645	- 2	-75
<i>i</i> Leonis	5.8	+0.22	-3.3	+14 36.5	22 6.6	+ 7 37.6	-0.6976	0.5226	-0.1705	0	-75
<i>ω</i> Virginis	5.4	-0.01	1.9	8 38.6	22 8 43.8	- 6 45.9	-0.5899	0.5150	0.2006	+ 7	-74
<i>ν</i> Virginis	4.2	0.04	1.4	7 2.7	12 38.4	- 2 58.0	+0.3727	0.5146	0.2031	+61	-17
<i>π</i> Virginis	4.6	0.11	1.4	7 7.6	20 34.6	+ 4 44.4	-1.3456	0.5140	0.2074	-55	-83
B.D. +6°, 2543	6.5	0.12	1.1	6 4.3	22 6.2	+ 6 13.4	-0.5100	0.5140	0.2082	+11	-69
<i>c</i> Virginis	5.1	-0.19	-0.4	+ 3 49.5	23 6 53.3	- 9 14.7	+0.0946	0.5140	-0.2117	+44	-33
Piazzi xii, 142	5.9	0.27	+0.1	+ 2 21.7	16 22.7	- 0 1.7	-0.3394	0.5148	0.2146	-20	-58
80 Virginis	5.6	0.55	2.6	- 4 55.6	24 22 0.0	+ 4 43.4	+1.1013	0.5224	0.2153	+85	+25
Piazzi xiii, 174	6.4	0.60	2.6	5 2.1	25 2 15.6	+ 8 51.4	+0.2994	0.5242	0.2143	+55	-22
<i>"</i> Virginis	6.5	0.62	3.1	6 22.7	4 28.2	+10 59.9	+1.2559	0.5252	0.2137	+84	+40
Lalande 26147	6.5	-0.78	+3.2	- 7 6.6	19 13.2	+ 1 17.8	-1.0797	0.5327	-0.2075	-25	-90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
ξ^1 Libræ	5.7	-0.98	+ 4.4	-11 31.3	26 12 38.1	- 5 50.8	+0.0415	0.5442	-0.1953	+37	-36
ξ^2 Libræ	5.7	0.99	4.2	11 2.3	13 45.4	- 4 45.7	-0.6823	0.5449	0.1943	- 2	-89
17 Libræ	6.4	1.00	4.1	10 47.1	14 26.4	- 4 6.0	-1.0786	0.5455	0.1936	-28	-90
18 Libræ	5.9	1.01	4.0	10 46.4	14 45.5	- 3 47.6	-1.1512	0.5458	0.1933	-34	-90
γ Libræ	4.1	1.22	4.7	14 28.9	27 7 24.2	-11 42.7	-0.3731	0.5591	0.1751	+12	-61
Bradley 1987	6.5	-1.26	+ 4.6	-14 44.8	10 53.8	- 8 20.3	-0.7020	0.5618	-0.1705	- 6	-90
η Libræ	5.5	1.27	4.8	15 22.7	11 10.7	- 8 4.1	-0.1004	0.5620	0.1701	+26	-44
θ Libræ	4.4	1.32	5.0	16 27.5	15 25.4	- 3 58.4	+0.2986	0.5657	0.1642	+47	-22
49 Libræ	5.4	1.36	4.7	16 15.7	18 16.4	- 1 13.4	-0.3651	0.5682	0.1599	+11	-61
B.D.-17°, 4502	6.4	1.42	5.1	18 5.7	22 19.8	+ 2 41.2	+0.8730	0.5718	0.1534	+72	+11
B. A. C. 5408	6.4	-1.44	+ 5.0	-18 17.9	28 0 20.1	+ 4 37.2	+0.7750	0.5736	-0.1502	+72	+ 5
χ Ophiuchi	4.9	1.51	4.6	18 14.8	5 31.6	+ 9 37.1	-0.0355	0.5781	0.1411	+26	-41
B. A. C. 5567	6.5	1.59	4.8	20 13.7	11 5.7	- 9 1.3	+1.2145	0.5830	0.1308	+70	+42
Bradley 2115	5.5	1.59	4.6	19 44.8	11 38.5	- 8 29.8	+0.6560	0.5837	0.1297	+67	- 2
Mayer 679	5.9	1.65	4.4	20 15.7	16 19.4	- 3 59.6	+0.5878	0.5875	0.1203	+62	- 6
B. A. C. 5700	6.1	-1.66	+ 4.0	-19 23.6	17 48.2	- 2 34.2	-0.4631	0.5887	-0.1173	+ 2	-69
B. A. C. 5746	6.2	1.71	4.0	20 21.9	20 52.1	+ 0 22.5	+0.1655	0.5913	0.1108	+34	-29
Bradley 2162	6.3	1.73	4.2	21 26.2	21 25.6	+ 0 54.7	+1.1820	0.5917	0.1096	+69	+39
ξ Ophiuchi	4.4	1.78	3.5	21 0.8	29 3 16.5	+ 6 31.7	+0.1520	0.5965	0.0965	+32	-30
B. A. C. 5866	5.9	1.80	3.5	21 21.3	4 43.6	+ 7 55.4	+0.3566	0.5975	0.0932	+43	-18
52 Ophiuchi	6.4	-1.86	+ 3.2	-21 58.9	8 50.5	+11 52.5	+0.6179	0.6006	-0.0834	+61	- 4
58 Ophiuchi	4.8	1.88	2.8	21 38.3	11 59.1	- 9 6.6	+0.0250	0.6029	0.0757	+23	-37
B. A. C. 6088	5.7	1.97	2.2	22 46.7	19 0.7	- 2 22.3	+0.6882	0.6074	0.0579	+65	+ 1
B. A. C. 6125	6.2	1.97	1.6	21 27.2	21 1.8	- 0 26.1	-0.7386	0.6087	0.0526	-21	-90
μ Sagittarii	4.1	1.98	1.3	21 5.0	23 30.7	+ 1 56.6	-1.2270	0.6101	0.0460	-59	-90
14 Sagittarii	5.6	-2.00	+ 1.4	-21 44.3	23 41.4	+ 2 6.8	-0.5861	0.6101	-0.0455	-13	-81
Bradley 2332	5.7	2.06	0.3	21 28.5	30 8 31.1	+10 34.3	-1.1396	0.6144	0.0215	-52	-90
Bradley 2335	5.8	2.10	0.7	23 35.0	8 42.6	+10 45.3	+0.9387	0.6145	0.0209	+66	+18
26 Sagittarii	6.1	2.11	0.6	23 55.2	9 56.7	+11 56.3	+1.2456	0.6149	0.0175	+66	+53
28 Sagittarii	5.6	2.10	+ 0.1	22 29.3	11 37.6	-10 27.1	-0.1913	0.6155	0.0128	+ 5	-50
30 Sagittarii	6.2	-2.11	- 0.2	-22 16.1	13 17.6	- 8 51.3	-0.4264	0.6160	-0.0081	- 8	-67
33 Sagittarii	5.8	2.10	0.5	21 28.4	14 28.3	- 7 43.6	-1.2167	0.6165	0.0048	-61	-90
ι^1 Sagittarii	5.0	2.12	0.2	22 51.5	14 30.7	- 7 41.3	+0.1479	0.6165	0.0047	+23	-30
ι^2 Sagittarii	5.1	2.13	0.3	22 47.2	14 51.6	- 7 21.3	+0.0756	0.6165	0.0037	+19	-34
Piazzixviii, 225	5.9	-2.14	- 0.3	-23 17.5	15 11.1	- 7 2.6	+0.5716	0.6166	-0.0028	+51	- 6

FEBRUARY.

NEW MOON.											
B.D.-11°, 6032	6.3	-1.78	-11.6	-11 11.5	3 18 51.4	- 7 25.4	+0.8716	0.5735	+0.2128	+79	+10
ψ^1 Aquarii	4.5	1.76	11.3	9 35.5	19 22.0	- 6 55.9	-0.6073	0.5731	0.2133	+ 3	-80
ψ^2 Aquarii	4.6	1.75	11.4	9 41.3	20 14.5	- 6 5.4	-0.3254	0.5725	0.2141	+18	-58
ψ^3 Aquarii	5.2	1.75	11.5	10 7.0	20 41.5	- 5 39.3	+0.1973	0.5722	0.2146	+47	-28
B.D.-10°, 6120	6.3	1.72	11.7	9 46.5	4 1 1.3	- 1 28.8	+0.7958	0.5691	0.2181	+80	+ 5
B. A. C. 8214	6.5	-1.68	-11.4	- 7 58.6	3 51.3	+ 1 15.0	-0.3749	0.5671	+0.2202	+17	-61
Mayer 1012	6.3	1.63	11.4	6 53.7	9 33.4	+ 6 45.1	-0.1910	0.5634	0.2237	+27	-50
30 Piscium	4.7	1.57	11.6	6 31.7	15 30.6	-11 30.2	+0.7841	0.5596	0.2265	+69	+ 4
33 Piscium	4.7	1.56	11.5	6 13.5	17 1.4	-10 2.5	+0.8237	0.5587	0.2271	+84	+ 6
Piazzix, 1	6.0	1.53	11.5	5 45.8	19 15.4	- 7 53.1	+0.8674	0.5574	0.2278	+84	+ 9
B. A. C. 81	6.3	-1.46	-10.9	- 2 43.9	5 1 40.7	- 1 41.0	-0.7213	0.5538	+0.2292	0	-90
14 Ceti	5.4	1.41	10.6	1 0.8	6 43.4	+ 3 11.5	-1.3043	0.5512	0.2298	-46	-90
20 Ceti	4.9	1.33	10.8	- 1 38.8	14 48.7	+11 0.6	+1.1961	0.5474	0.2294	+88	+33
26 Ceti	6.0	1.28	10.2	+ 0 52.3	19 50.8	- 8 7.2	-0.2199	0.5453	0.2285	+27	-51
33 Ceti	6.1	1.25	9.8	1 57.2	23 1.0	- 5 3.2	-0.6065	0.5441	0.2276	+ 6	-79
f Piscium	5.1	-1.22	- 9.5	+ 3 7.6	6 2 25.7	- 1 45.1	-1.0387	0.5429	+0.2265	-21	-87

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	"	° ' "	d h m	h m				°	°
Lalande 2632	6.5	-1.17	-9.6	+ 3 3.3	6 6 44.1	+ 2 24.9	+0.0058	0.5415	+0.2248	+39	-38
ν Piscium	4.6	1.10	8.9	5 1.2	13 39.1	+ 9 6.5	-0.4808	0.5396	0.2214	+13	-68
Piazzi i, 249	6.5	0.99	8.1	7 17.5	7 0 52.3	- 4 1.9	-0.4016	0.5373	0.2141	+17	-61
64 Ceti	5.8	0.96	7.8	8 8.2	4 0.3	- 0 59.8	-0.6183	0.5369	0.2117	+ 5	-77
δ^1 Ceti	4.5	0.95	7.7	8 24.8	4 47.5	- 0 14.1	-0.7408	0.5367	0.2111	- 2	-80
25 Arietis	6.5	-0.88	-7.1	+ 9 47.3	11 44.7	+ 6 29.8	-0.7392	0.5361	+0.2052	- 2	-79
ϵ^2 Ceti	4.5	0.87	7.7	8 2.8	12 7.1	+ 6 51.5	+1.1696	0.5360	0.2048	+90	+34
B. F. 310	6.3	0.87	7.4	9 9.2	12 48.0	+ 7 31.1	+0.1447	0.5360	0.2042	+47	-28
85 Ceti	6.3	0.81	6.9	10 20.9	19 1.8	-10 26.9	-0.1392	0.5356	0.1982	+46	-28
μ Ceti	4.3	0.79	7.1	9 43.5	20 12.8	- 9 18.2	+1.0329	0.5356	0.1970	+90	+24
W. B. ii, 1033	5.8	-0.69	-5.8	+12 49.9	8 6 34.7	+ 0 44.2	-0.2760	0.5356	+0.1856	+23	-50
Mayer 121	6.4	0.53	4.8	15 7.7	21 43.2	- 8 36.1	-0.0607	0.5368	0.1666	+35	-35
Piazzi iii, 103	6.3	0.52	4.4	16 14.2	22 29.4	- 7 51.4	-1.1240	0.5368	0.1656	-30	-74
Mayer 136	5.9	0.45	4.1	17 3.1	9 5 1.1	- 1 28.4	-0.9434	0.5376	0.1563	-16	-73
B. A. C. 1239	6.3	0.41	4.0	17 2.2	8 40.1	+ 1 59.7	-0.3759	0.5380	0.1511	+18	-52
Piazzi iii, 249	6.1	-0.38	-4.0	+17 5.6	12 12.3	+ 5 25.2	+0.0871	0.5386	+0.1458	+44	-25
B.D. +16°, 569	6.2	0.35	4.0	17 2.4	14 22.3	+ 7 31.1	+0.4574	0.5389	0.1425	+68	- 5
B.D. +18°, 624	6.0	0.31	3.4	18 31.3	18 7.1	+11 8.6	-0.6253	0.5395	0.1367	+ 4	-67
δ^2 Tauri	3.9	0.30	3.8	17 19.6	19 20.5	-11 40.3	+0.8379	0.5397	0.1348	+90	+18
δ^3 Tauri	4.9	0.29	3.9	17 13.8	19 53.9	-11 8.0	+1.0170	0.5398	0.1339	+90	+30
B. A. C. 1361	6.0	-0.29	-3.3	+18 49.8	20 16.7	-10 46.0	-0.6687	0.5399	+0.1333	+ 1	-69
δ^3 Tauri	4.3	0.29	3.7	17 43.0	20 33.3	-10 29.9	+0.5764	0.5399	0.1329	+79	+ 3
ϵ Tauri	3.6	0.27	3.2	18 58.6	22 1.4	- 9 4.6	-0.5979	0.5401	0.1305	+ 5	-64
B.D. +17°, 750	6.2	0.24	3.6	17 49.3	10 23.9	- 6 46.7	+0.9622	0.5405	0.1266	+90	+27
B. A. C. 1417	6.4	0.24	3.0	19 41.5	1 23.6	- 5 49.0	-0.9465	0.5407	0.1250	-17	-70
Mayer 177	6.1	-0.18	-3.3	+18 34.1	6 26.0	- 0 56.3	+0.8861	0.5416	+0.1166	+90	+23
δ^1 Tauri	5.2	0.15	3.3	18 41.0	8 50.8	+ 1 23.8	+1.0379	0.5419	0.1125	+90	+34
B.D. +19°, 811	6.2	0.14	3.0	19 20.2	10 32.4	+ 3 2.0	+0.5135	0.5422	0.1095	+73	+ 2
B.D. +21°, 755	6.3	0.09	2.4	21 8.9	14 56.9	+ 7 18.0	-1.0027	0.5429	0.1018	-22	-69
Mayer 198	6.3	0.09	2.9	19 40.8	15 31.9	+ 7 51.9	+0.6636	0.5430	0.1008	+90	+11
δ^1 Tauri	5.2	-0.08	-2.7	+20 17.8	16 35.7	+ 8 53.5	+0.0947	0.5432	+0.0989	+44	-19
107 Tauri	6.5	0.07	2.9	19 44.4	17 5.4	+ 9 22.3	+0.7528	0.5432	0.0980	+90	+17
η Tauri	5.1	0.02	2.2	22 0.1	21 58.0	- 9 54.6	-1.2689	0.5440	0.0892	-55	-68
B. A. C. 1639	6.2	-0.02	2.8	20 2.3	21 59.5	- 9 53.2	+0.8868	0.5440	0.0892	+90	+26
θ Tauri	4.8	+0.02	2.2	21 51.5	11 54.1	- 6 6.2	-0.7764	0.5446	0.0820	- 6	-68
Piazzi v, 125	6.1	+0.05	-2.7	+20 24.5	4 45.2	- 3 20.7	+1.0429	0.5450	+0.0767	+90	+38
ζ Tauri	3.0	0.06	2.5	21 5.2	6 37.0	- 1 32.5	+0.4381	0.5452	0.0733	+67	+ 2
Piazzi v, 184	6.5	0.08	2.0	22 36.9	8 39.6	+ 0 26.0	-1.0976	0.5455	0.0694	-31	-67
141 Tauri	6.3	0.17	2.1	22 23.9	17 51.2	+ 9 19.5	-0.3039	0.5465	0.0518	+21	-37
δ^1 Geminorum	4.1	0.18	1.9	23 16.1	18 58.2	+10 24.3	-1.2071	0.5466	0.0497	-45	-67
B. A. C. 1970	6.0	+0.21	-2.2	+22 12.3	21 31.5	-11 7.5	+0.0874	0.5468	+0.0447	+44	-14
3 Geminorum	5.6	0.21	1.9	23 7.7	21 35.8	-11 3.4	-0.9297	0.5468	0.0446	-17	-67
6 Geminorum	6.3	0.22	2.0	22 55.8	22 48.5	- 9 53.0	-0.6572	0.5470	0.0422	+ 1	-62
η Geminorum	3.5	0.23	2.1	22 32.0	12 0.9	- 8 43.0	-0.1706	0.5470	0.0399	+29	-28
μ Geminorum	3.2	0.26	2.1	22 33.7	3 46.9	- 5 4.5	-0.0647	0.5473	0.0325	+35	-21
B. A. C. 2064	6.0	+0.28	-1.9	+23 22.7	4 58.7	- 3 55.1	-0.9312	0.5473	+0.0301	-18	-67
δ^1 Geminorum	5.2	0.37	2.4	21 52.2	17 8.8	+ 7 51.0	+0.9594	0.5476	0.0060	+90	+39
B. A. C. 2238	5.8	0.38	2.0	23 42.6	17 19.4	+ 8 1.2	-1.0799	0.5476	+0.0057	-30	-66
NEPTUNE				22 2.3	20 49.8	+11 24.7	+0.7816	0.5484	-0.0014	+90	+28
44 Geminorum	5.9	0.43	2.3	22 46.5	23 33.5	- 9 57.0	-0.0463	0.5474	0.0067	+36	-18
δ^1 Geminorum	3.5	+0.47	-2.6	+22 9.1	13 6 30.6	- 3 13.5	+0.5517	0.5470	-0.0204	+78	+13
58 Geminorum	6.0	0.49	2.4	23 7.3	8 3.7	- 1 43.5	-0.5598	0.5469	0.0234	+ 6	-52
B. A. C. 2455	6.4	0.49	2.7	21 43.2	9 41.0	- 0 9.4	+0.9574	0.5468	0.0266	+90	+37
63 Geminorum	5.3	0.50	2.8	21 38.0	10 5.7	+ 0 14.5	+1.0418	0.5467	0.0274	+90	+43
B.D. +23°, 1744	6.4	0.52	2.5	23 5.0	12 27.9	+ 2 32.0	-0.6394	0.5464	0.0320	+ 2	-59
B.D. +23°, 1780	6.3	+0.54	-2.5	+23 13.9	16 17.3	+ 6 13.9	-0.9406	0.5460	-0.0395	-18	-67

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.		
		$\Delta\alpha$	$\Delta\delta$										
		s	"	° ' "	d h m	h m				°	°		
B. A. C. 2544	6.3	+0.54	-2.7	+22 37.0	13 17 25.8	+ 7 20.2	-0.3033	0.5459	-0.0417	+21	-36		
82 Geminorum	6.3	0.56	2.7	23 22.1	19 51.8	+ 9 41.4	-1.2466	0.5455	0.0464	-52	-67		
μ^1 Cancri	6.2	0.61	2.9	22 53.9	14 4 16.5	- 6 10.4	-1.1811	0.5441	0.0623	-41	-67		
μ^2 Cancri	5.5	0.60	3.1	21 50.9	4 59.1	- 5 29.2	-0.0593	0.5440	0.0636	+35	-24		
Piazzi viii, 42	6.0	0.63	3.3	21 2.2	10 59.6	+ 0 19.7	+0.4264	0.5427	0.0747	+66	+ 1		
η Cancri	5.4	+0.65	-3.5	+20 45.2	16 55.2	+ 6 3.9	+0.2674	0.5415	-0.0854	+55	- 9		
39 Cancri	6.5	0.66	3.6	20 19.9	20 29.1	+ 9 31.0	+0.4198	0.5406	0.0917	+66	- 1		
40 Cancri	6.5	0.66	3.6	20 17.7	20 31.6	+ 9 33.4	+0.4565	0.5406	0.0918	+69	0		
B. A. C. 2919	6.5	0.66	3.6	19 59.7	20 36.9	+ 9 38.5	+0.7828	0.5406	0.0919	+90	+19		
ϵ Cancri	6.3	0.66	3.7	19 52.2	20 39.5	+ 9 41.0	+0.9179	0.5405	0.0920	+90	+28		
B. A. C. 2991	6.1	+0.68	-3.8	+19 10.5	15 1 38.6	- 9 29.3	+1.2095	0.5393	-0.1006	+90	+52		
8 Leonis	5.9	0.71	4.4	16 50.9	16 0 22.0	-11 28.7	+1.0835	0.5328	0.1367	+90	+35		
B. D. +16°, 2077	6.3	0.71	4.7	16 12.3	14 42.9	+ 2 25.8	-0.3076	0.5285	0.1564	+22	-48		
37 Leonis	5.5	0.70	4.8	14 11.2	20 17.8	+ 7 50.5	+1.0331	0.5269	0.1633	+90	+27		
42 Leonis	6.1	0.71	4.8	15 26.3	22 54.6	+10 22.7	-0.7828	0.5262	0.1665	- 5	-75		
i Leonis	5.8	+0.70	-4.9	+14 36.5	17 4 12.4	- 8 29.0	-0.7627	0.5247	-0.1725	- 4	-70		
ω Virginis	5.4	0.59	4.8	8 38.5	18 14 39.1	+ 0 56.9	-0.7019	0.5173	0.2028	+ 1	-81		
ν Virginis	4.2	0.57	4.6	7 2.6	18 32.7	+ 4 43.7	+0.2554	0.5169	0.2052	+53	-24		
B. D. +6°, 2543	6.5	0.53	4.5	6 4.3	19 3 58.3	-10 7.1	-0.6392	0.5161	0.2102	+ 4	-80		
ϵ Virginis	5.1	0.48	4.1	3 49.4	12 44.0	- 1 36.6	-0.0446	0.5158	0.2137	+36	-41		
Piazzi xii, 142	5.9	+0.43	-3.8	+ 2 21.6	22 12.7	+ 7 35.6	-0.4900	0.5161	-0.2162	+12	-69		
80 Virginis	5.6	0.22	2.0	- 4 55.7	21 3 55.8	-11 33.4	+0.9310	0.5215	0.2157	+85	+13		
Piazzi xiii, 174	6.4	0.19	1.9	5 2.2	8 13.4	- 7 23.5	+0.1220	0.5228	0.2146	+45	-32		
π Virginis	6.5	0.17	1.6	6 22.7	10 27.2	- 5 13.7	+1.0833	0.5235	0.2138	+84	+24		
Lalande 26147	6.5	+0.04	-1.3	7 6.7	22 1 22.6	+ 9 14.6	-1.2774	0.5296	0.2069	-45	-90		
ζ^1 Libræ	5.7	-0.13	+0.1	-11 31.4	19 5.4	+ 2 24.0	-0.1508	0.5390	-0.1937	+27	-47		
ζ^2 Libræ	5.7	0.14	-0.1	11 2.3	20 14.1	+ 3 30.5	-0.8828	0.5397	0.1927	-14	-90		
17 Libræ	6.4	0.15	-0.2	10 47.1	20 56.0	+ 4 11.1	-1.2839	0.5401	0.1920	-49	-90		
γ Libræ	4.1	0.34	+0.9	14 29.0	23 14 18.0	- 3 1.3	-0.5698	0.5516	0.1728	- 2	-77		
Bradley 1987	6.5	0.38	0.9	14 44.9	17 53.2	+ 0 26.7	-0.9026	0.5541	0.1681	-18	-90		
η Libræ	5.5	-0.39	+1.1	-15 22.8	18 10.6	+ 0 43.5	-0.2925	0.5543	-0.1677	+16	-56		
θ Libræ	4.4	0.44	1.4	16 27.6	22 32.5	+ 4 56.4	+0.1137	0.5575	0.1616	+37	-32		
49 Libræ	5.4	0.47	1.3	16 15.7	24 1 28.5	+ 7 46.2	-0.5587	0.5596	0.1573	0	-77		
B. D. -17°, 4502	6.4	0.53	1.9	18 5.8	5 39.2	+11 48.2	+0.7001	0.5628	0.1508	+72	0		
B. A. C. 5408	6.4	0.56	1.9	18 18.0	7 43.3	-10 12.0	+0.6018	0.5643	0.1475	+65	- 5		
χ Ophiuchi	4.9	-0.62	+1.7	-18 14.8	13 4.8	- 5 2.1	-0.2186	0.5684	-0.1384	+16	-52		
B. A. C. 5567	6.5	0.70	2.2	20 13.7	18 49.9	+ 0 30.6	+1.0557	0.5727	0.1280	+70	+26		
Bradley 2115	5.5	0.71	2.0	19 44.9	19 23.9	+ 1 3.3	+0.4885	0.5731	0.1270	+56	-12		
Mayer 679	5.9	0.78	2.0	20 15.7	25 0 14.4	+ 5 43.1	+0.4226	0.5768	0.1176	+50	-15		
B. A. C. 5700	6.1	0.79	1.6	19 23.7	1 46.4	+ 7 11.8	-0.6449	0.5779	0.1146	- 9	-87		
B. A. C. 5746	6.2	-0.84	+1.9	-20 21.9	4 56.7	+10 14.9	-0.0032	0.5802	-0.1081	+24	-39		
Bradley 2162	6.3	0.85	2.2	21 26.2	5 31.3	+10 48.2	+1.0313	0.5807	0.1069	+69	+24		
ξ Ophiuchi	4.4	0.92	1.7	21 0.8	11 34.8	- 7 22.1	-0.0112	0.5850	0.0939	+23	-39		
B. A. C. 5866	5.9	0.95	1.8	21 21.4	13 5.1	- 5 55.3	+0.1983	0.5861	0.0906	+34	-28		
52 Ophiuchi	6.4	1.01	1.8	21 58.9	17 21.0	- 1 49.2	+0.4684	0.5890	0.0810	+50	-12		
58 Ophiuchi	4.8	-1.05	+1.4	-21 38.3	20 36.5	+ 1 18.7	-0.1317	0.5911	-0.0734	+14	-46		
B. A. C. 6088	5.7	1.15	1.3	22 46.7	26 3 53.5	+ 8 18.4	+0.5508	0.5955	0.0558	+53	- 7		
B. A. C. 6125	6.2	1.17	0.8	21 27.2	5 59.1	+10 19.0	-0.8986	0.5967	0.0506	-31	-90		
14 Sagittarii	5.6	1.21	0.6	21 44.3	8 44.6	-11 2.1	-0.7402	0.5982	0.0436	-22	-90		
Bradley 2335	5.8	1.34	0.5	23 35.0	18 5.3	- 2 4.0	+0.8219	0.6026	0.0193	+66	+10		
26 Sagittarii	6.1	-1.36	+0.5	-23 55.2	19 22.1	- 0 50.3	+1.1355	0.6031	-0.0160	+66	+36		
28 Sagittarii	5.6	1.36	-0.1	22 29.3	21 6.5	+ 0 49.8	-0.3231	0.6038	0.0113	- 2	-59		
30 Sagittarii	6.2	1.38	0.3	22 16.1	22 50.0	+ 2 29.1	-0.5597	0.6044	0.0067	-15	-79		
ν^1 Sagittarii	5.0	1.40	0.2	22 51.5	27 0 5.7	+ 3 41.7	+0.0256	0.6048	0.0033	+16	-37		
ν^2 Sagittarii	5.1	1.40	0.3	22 47.2	0 27.3	+ 4 2.5	-0.0474	0.6050	0.0024	+12	-42		
Piazzi xviii, 225	5.9	-1.41	-0.2	-23 17.5	0 47.4	+ 4 21.7	+0.4571	0.6051	-0.0015	+42	-13		

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.											
FEBRUARY.											
THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle. H	J'	x'	y'	N.	S.
		Δα	Δδ								
B. A. C. 6485	6.3	-1.43	-0.5	-22 49.5	27 2 56.3	+ 6 25.3	-0.0061	0.6058	+0.0043	+15	-39
o Sagittarii	3.9	1.43	0.9	21 52.6	4 6.7	+ 7 32.9	-0.9468	0.6060	0.0075	-38	-90
Lalande 35745	6.5	1.47	0.6	23 20.2	5 38.1	+ 9 0.4	+0.5250	0.6064	0.0116	+48	-9
B. A. C. 6561	6.4	1.47	1.2	21 48.7	7 4.3	+10 23.2	-0.9766	0.6068	0.0155	-39	-90
URANUS	..	..	..	22 53.6	7 39.3	+10 56.7	+0.1119	0.6052	0.0169	+22	-32
Piazzi xix, 61	5.5	-1.51	-1.3	-22 34.5	10 9.5	-10 39.3	-0.1544	0.6074	+0.0240	+8	-48
50 Sagittarii	5.5	1.52	1.6	21 57.6	12 19.0	-8 35.2	-0.7085	0.6078	0.0298	-21	-90
B. A. C. 6671	6.1	1.53	1.9	21 30.3	14 3.5	-6 55.0	-1.1049	0.6080	0.0346	-48	-90
53 Sagittarii	6.3	1.59	1.7	23 38.3	17 24.0	-3 42.8	+1.1473	0.6084	0.0436	+66	+37
Bradley 2488	6.1	1.59	1.7	23 38.4	17 30.7	-3 36.4	+1.1547	0.6084	0.0439	+66	+38
B. A. C. 6864	6.1	-1.65	-2.7	-22 59.5	28 1 33.7	+ 4 6.6	+0.9489	0.6085	+0.0656	+67	+18
B. A. C. 6878	6.5	1.66	2.8	22 51.3	2 27.1	+ 4 57.7	-0.8727	0.6084	0.0680	+67	+13
4 Capricorni	5.7	1.70	3.6	22 5.7	7 52.0	+10 9.2	+0.5272	0.6079	0.0823	+54	-9
20 Capricorni	6.2	1.76	5.8	-19 23.6	23 45.4	+ 1 23.5	-0.5114	0.6041	0.1221	-2	-73
NEW MOON.											
MARCH.											
26 Ceti	6.0	-1.52	-10.9	+ 0 52.3	4 6 12.2	+ 4 2.3	-0.0571	0.5533	+0.2335	+37	-42
33 Ceti	6.1	-1.50	-10.7	+ 1 57.2	9 17.4	+ 7 1.3	-0.4338	0.5523	+0.2327	+16	-65
f Piscium	5.1	1.48	10.4	3 7.6	12 36.6	+10 13.9	-0.8549	0.5513	0.2316	-8	-87
Lalande 2632	6.5	1.46	10.4	3 3.3	16 47.8	-9 43.3	+0.1834	0.5501	0.2299	+49	-28
v Piscium	4.6	1.41	9.9	5 1.2	23 30.9	-3 13.6	-0.2868	0.5484	0.2264	+23	-55
Piazzi i, 249	6.5	1.33	9.2	7 17.5	5 10 24.0	+ 7 17.9	-0.1941	0.5464	0.2189	+28	-48
64 Ceti	5.8	-1.32	-8.9	+ 8 8.2	13 26.4	+10 14.3	-0.4038	0.5458	+0.2164	+17	-61
ξ Ceti	4.5	1.31	8.9	8 24.8	14 12.1	+10 58.5	-0.5241	0.5458	0.2160	+11	-69
ξ Arietis	5.5	1.27	8.3	10 11.5	19 43.0	-7 41.5	-1.1907	0.5451	0.2108	-34	-80
25 Arietis	6.5	1.26	8.4	9 47.3	20 56.5	-6 30.4	-0.5151	0.5450	0.2096	+11	-68
B. F. 310	6.3	1.25	8.5	9 9.2	21 57.9	-5 31.0	+0.3577	0.5449	0.2086	+60	-17
85 Ceti	6.3	-1.20	-8.0	+10 20.9	6 4 0.3	+ 0 19.6	+0.3581	0.5444	+0.2023	+60	-17
38 Arietis	5.2	1.20	7.5	12 3.4	5 8.5	+ 1 25.5	-1.1946	0.5444	0.2011	-35	-78
μ Ceti	4.3	1.19	8.2	9 43.4	5 9.1	+ 1 26.1	+1.2404	0.5444	0.2011	+90	+42
W. B. ii, 1033	5.8	1.11	7.0	12 49.9	15 12.4	+11 9.7	-0.0430	0.5440	0.1892	+36	-36
Mayer 121	6.4	0.98	5.8	15 7.6	7 5 55.0	+ 1 23.4	+0.1768	0.5442	0.1693	+49	-22
Piazzi iii, 103	6.3	-0.98	-5.4	+16 14.2	6 39.9	+ 2 6.8	-0.8729	0.5443	+0.1682	-11	-74
Mayer 136	5.9	0.91	5.0	17 3.1	13 5.0	+ 8 19.2	-0.6932	0.5446	0.1587	0	-72
B. A. C. 1239	6.3	0.88	4.8	17 2.2	16 34.6	+11 42.0	-0.1320	0.5448	0.1532	+31	-37
Piazzi iii, 215	5.8	0.88	4.6	17 56.0	16 38.9	+11 46.1	-1.0787	0.5448	0.1531	-26	-72
Piazzi iii, 249	6.1	0.84	4.7	17 5.6	20 1.5	-8 57.9	+0.3261	0.5450	0.1477	+59	-13
B.D.+16°, 569	6.2	-0.82	-4.7	+17 2.4	22 8.4	-6 55.2	+0.6923	0.5451	+0.1443	+90	+8
B.D.+18°, 624	6.0	0.78	4.1	18 31.3	8 1 47.9	-3 22.9	-0.3780	0.5454	0.1382	+18	-50
d Tauri	3.9	0.77	4.4	17 19.6	2 59.6	-2 13.5	+1.0691	0.5455	0.1363	+90	+34
d Tauri	4.9	0.76	4.5	17 13.8	3 32.2	-1 42.0	+1.2462	0.5456	0.1354	+90	-52
B. A. C. 1361	6.0	0.76	3.9	18 49.8	3 54.5	-1 20.5	-0.4211	0.5456	0.1347	+15	-53
d Tauri	4.3	-0.76	-4.3	+17 43.0	4 10.7	-1 4.8	+0.8105	0.5456	+0.1343	+90	-16
ε Tauri	3.6	0.74	3.8	18 58.6	5 36.9	+ 0 18.6	-0.3511	0.5457	0.1318	+19	-48
B.D.+17°, 750	6.2	0.71	4.1	17 49.3	7 56.2	+ 2 33.3	+1.1922	0.5459	0.1278	-90	+46
B. A. C. 1417	6.4	0.71	3.4	19 41.5	8 54.8	+ 3 30.0	-0.6966	0.5459	0.1261	0	-70
Mayer 177	6.1	0.65	3.7	18 34.1	13 50.8	+ 8 16.2	+1.1166	0.5463	0.1174	-90	-40
i Tauri	5.2	-0.62	-3.6	+18 41.0	16 12.7	+10 33.4	+1.2666	0.5465	+0.1132	-90	-58
B.D.+19°, 811	6.2	0.61	3.3	19 20.2	17 52.5	-11 50.2	+0.7469	0.5466	0.1102	+90	-15
ε Tauri	4.7	0.57	2.8	21 27.5	21 36.4	-8 13.7	-1.1532	0.5469	0.1034	-36	-60
B.D.+21°, 755	6.3	0.57	2.6	21 8.0	22 12.1	7 39.2	-0.7505	0.5469	0.1023	-5	-60
Mayer 198	6.3	0.55	3.1	19 40.8	22 46.4	-7 6.0	+0.8044	0.5469	0.1012	+90	-25
γ Tauri	5.2	-0.54	-2.8	+20 17.8	23 49.2	-6 5.3	+0.3304	0.5470	-0.0993	+50	7

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.		
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.			Hour Angle, //	Y	x'	y'	N.	S.	
		$\Delta\alpha$	$\Delta\delta$		d	h	m							
105 Tauri	6.0	-0.55	-2.3	+21 35.0	8	23	50.8	- 6	3.7	-1.0626	0.5470	+0.0992	-27	-68
107 Tauri	6.5	0.54	3.0	19 44.4	9	0	18.4	- 5	37.1	+0.9825	0.5470	0.0984	+90	+32
" Tauri	5.1	0.49	2.1	22 0.1	5	6.1		- 0	58.9	-1.0240	0.5473	0.0894	-24	-68
B. A. C. 1639	6.2	0.48	2.8	20 2.3	5	7.6		- 0	57.5	+1.1139	0.5473	0.0894	+90	+43
" Tauri	4.8	0.44	2.1	21 51.5	8	58.6		+ 2	45.9	-0.5374	0.5476	0.0820	+ 8	-55
Piazzii v, 125	6.1	-0.40	-2.5	+20 24.5	11	47.3		+ 5	28.9	+1.2664	0.5477	+0.0766	+90	+63
" Tauri	3.0	0.38	2.3	21 5.2	13	37.5		+ 7	15.5	+0.6652	0.5477	0.0731	+90	+14
Piazzii v, 184	6.5	0.37	1.7	22 36.9	15	38.6		+ 9	12.6	-0.8604	0.5478	0.0691	-12	-67
141 Tauri	6.3	0.26	1.6	22 23.9	10	0	43.7	- 6	0.4	-0.0784	0.5480	0.0513	+34	-24
1 Geminorum	4.1	0.25	1.3	23 16.1	1	50.1		- 4	56.2	-0.9768	0.5481	0.0491	-21	-67
B. A. C. 1970	6.0	-0.22	-1.6	+22 12.3	4	21.8		- 2	29.6	+0.3079	0.5480	+0.0441	+58	- 2
3 Geminorum	5.6	0.22	1.3	23 7.7	4	26.1		- 2	25.4	-0.7032	0.5480	0.0439	- 2	-66
6 Geminorum	6.3	0.20	1.4	22 55.8	5	38.1		- 1	15.8	-0.4333	0.5480	0.0415	+14	-44
" Geminorum	3.5	0.19	1.5	22 32.0	6	49.8		- 0	6.5	+0.0495	0.5480	0.0391	+42	-16
" Geminorum	3.2	0.14	1.5	22 33.7	10	33.9		+ 3	30.1	+0.1518	0.5479	0.0317	+49	- 9
B. A. C. 2064	6.0	-0.13	-1.2	+23 22.7	11	45.1		+ 4	38.9	-0.7112	0.5479	+0.0293	- 2	-66
" Geminorum	5.2	+0.01	1.6	21 52.2	23	50.7		- 7	39.5	+1.1597	0.5473	0.0050	+90	+55
B. A. C. 2238	5.8	0.01	1.0	23 42.6	11	0	1.2	- 7	29.4	-0.8714	0.5472	+0.0047	-13	-66
NEPTUNE				22 5.2	2	46.8		- 4	49.3	+0.9262	0.5474	-0.0009	+90	+37
44 Geminorum	5.9	0.08	1.3	22 46.5	6	13.7		- 1	29.3	+0.1515	0.5466	0.0078	+48	- 7
" Geminorum	3.5	+0.15	-1.5	+22 9.1	13	9.5		+ 5	12.9	+0.7401	0.5459	-0.0215	+90	+24
58 Geminorum	6.0	0.17	1.2	23 7.4	14	42.4		+ 6	42.7	-0.3697	0.5457	0.0246	+18	-38
B. A. C. 2455	6.4	0.18	1.6	21 43.2	16	19.5		+ 8	16.6	+1.1409	0.5455	0.0278	+90	+51
63 Geminorum	5.3	0.19	1.7	21 38.0	16	44.2		+ 8	40.4	+1.2247	0.5454	0.0285	+90	+61
B.D.-23°.1744	6.4	0.22	1.2	23 5.0	19	6.1		+10	57.7	-0.4544	0.5451	0.0332	+13	-45
B.D.-23°.1780	6.3	+0.26	-1.2	+23 13.9	22	55.3		- 9	20.6	-0.7596	0.5445	-0.0407	- 5	-67
B. A. C. 2544	6.3	0.27	1.4	22 37.0	12	0	3.6	- 8	14.5	-0.1255	0.5443	0.0429	+32	-26
82 Geminorum	6.3	0.29	1.2	23 22.1	2	29.6		- 5	53.3	-1.0693	0.5437	0.0476	-28	-67
" Cancrī	6.2	0.37	1.4	22 53.9	10	54.2		+ 2	14.9	-1.0161	0.5423	0.0636	-24	-67
" Cancrī	5.5	0.38	1.7	21 50.9	11	36.8		+ 2	56.1	+0.1024	0.5421	0.0650	+45	-15
Piazzii viii, 42	6.0	+0.43	-2.0	+21 2.3	17	37.4		+ 8	45.1	+0.5785	0.5409	-0.0760	+80	+ 9
JUPITER				20 3.1	22	58.4		-10	4.2	+1.2409	0.5423	0.0863	+90	+57
" Cancrī	5.4	0.48	2.2	20 45.2	23	33.4		- 9	30.3	+0.4109	0.5395	0.0867	+65	- 1
39 Cancrī	6.5	0.51	2.3	20 19.9	13	3	7.5	- 6	3.1	+0.5574	0.5386	0.0930	+78	+ 6
40 Cancrī	6.5	0.51	2.4	20 17.8	3	10.0		- 6	0.7	+0.5939	0.5386	0.0931	+82	+ 8
B. A. C. 2919	6.5	+0.51	-2.4	+19 59.7	3	15.3		- 5	55.6	+0.9196	0.5386	-0.0933	+90	+28
" Cancrī	6.3	0.51	2.4	19 52.2	3	17.9		- 5	53.1	+1.0543	0.5386	0.0934	+90	+37
" Cancrī	4.9	0.52	2.0	21 48.0	4	38.4		- 4	35.1	-1.2131	0.5383	0.0957	-43	-68
8 Leonis	5.9	0.69	3.6	16 51.0	14	7	1.9	- 3	1.4	+1.1712	0.5314	0.1382	+90	+42
B.D.-16°.2077	6.3	0.77	4.0	16 12.3	21	22.6		+10	53.0	-0.2455	0.5278	0.1582	+25	-45
37 Leonis	5.5	+0.78	-4.4	+14 11.2	15	2	57.0	- 7	42.7	+1.0807	0.5264	-0.1653	+90	+31
42 Leonis	6.1	0.80	4.2	15 26.3	5	33.6		- 5	10.8	-0.7364	0.5258	0.1685	- 2	-74
" Leonis	5.8	0.81	4.5	14 36.5	10	50.6		- 0	3.3	-0.7275	0.5245	0.1747	- 2	-75
" Virginis	5.4	0.88	5.5	8 38.5	16	21	7.5	+ 9	12.8	-0.7430	0.5192	0.2058	- 2	-80
" Virginis	4.2	0.86	5.6	7 2.6	17	0	59.4	-11	2.0	+0.2021	0.5189	0.2083	+50	-27
B.D.-6°.2543	6.5	+0.86	-5.7	+ 6 4.2	10	20.4		- 1	57.5	-0.7104	0.5185	-0.2135	+ 1	-84
" Virginis	5.1	0.85	5.7	3 49.4	19	1.4		+ 6	28.3	-0.1378	0.5186	0.2171	+31	-46
Piazzii xii, 142	5.9	0.84	5.6	+ 2 21.6	18	4	24.6	- 8	25.0	-0.6021	0.5193	0.2198	+ 7	-79
80 Virginis	5.6	0.76	4.8	- 4 55.7	19	9	49.3	- 3	52.4	+0.7539	0.5249	0.2191	+80	+ 2
Piazzii xiii, 174	6.4	0.75	4.7	5 2.2	14	4.5		+ 0	15.1	-0.0602	0.5262	0.2179	+35	-42
" Virginis	6.5	+0.74	-4.5	- 6 22.8	16	17.0		+ 2	23.6	+0.8945	0.5269	-0.2171	+84	+10
B.D.-12°.4134	6.4	0.59	2.8	12 27.2	20	21	34.5	+ 6	46.4	+1.2118	0.5393	0.1987	+78	+36
" Libræ	5.7	0.56	3.0	11 31.4	21	0	41.0	+ 9	46.9	-0.3838	0.5409	0.1958	+15	-62
" Libræ	5.7	0.56	3.1	11 2.4	1	49.4		+10	53.1	-1.1175	0.5415	0.1947	-31	-90
" Libræ	6.2	0.48	1.9	15 13.0	13	10.2		- 2	8.3	+1.1408	0.5479	0.1824	+75	+30
" Libræ	4.1	+0.42	-2.0	-14 29.0	19	51.7		+ 4	19.8	-0.8226	0.5520	-0.1740	13	-90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	y'	x'	y'	N.	S.		
		$\Delta\alpha$	$\Delta\delta$										
Bradley 1987	6.5	+0.39	-1.9	-14 44.9	21 23 27.3	+ 7 48.1	-1.1591	0.5540	-0.1690	-38	-90		
7 Libræ	5.5	0.39	1.6	15 22.8	23 44.7	+ 8 4.9	-0.5472	0.5542	0.1686	+ 2	-75		
8 Libræ	4.4	0.35	1.2	16 27.6	22 4 7.4	-11 41.3	-0.1422	0.5568	0.1623	+23	-47		
49 Libræ	5.4	0.31	1.4	16 15.8	7 4.2	- 8 50.6	-0.8191	0.5527	0.1578	-15	-90		
B.D. -17° 4502	6.4	0.28	0.7	18 5.8	11 16.3	- 4 47.2	+0.4439	0.5614	0.1511	+55	-14		
B. A. C. 5408	6.4	+0.26	-0.6	-18 18.0	13 21.2	- 2 46.7	+0.3444	0.5627	-0.1477	+49	-20		
x Ophiuchi	4.9	0.20	-0.6	18 14.9	18 45.1	+ 2 25.7	-0.4821	0.5661	0.1384	+ 2	-70		
B. A. C. 5567	6.5	0.14	+0.2	20 13.8	23 0 33.7	+ 8 1.7	+0.8001	0.5697	0.1278	+70	+ 7		
Bradley 2115	5.5	0.14	0.0	19 44.9	1 8.1	+ 8 34.9	+0.2286	0.5701	0.1267	+39	-26		
Mayer 679	5.9	0.08	+0.2	20 15.7	6 2.0	-10 41.9	+0.1623	0.5731	0.1172	+35	-30		
B. A. C. 5700	6.1	+0.06	-0.1	-19 23.7	7 35.2	- 9 12.2	-0.9139	0.5741	-0.1141	-26	-90		
B. A. C. 5746	6.2	0.02	+0.2	20 21.9	10 48.3	- 6 6.1	-0.2667	0.5760	0.1075	+10	-55		
Bradley 2162	6.3	+0.02	0.5	21 26.2	11 23.4	- 5 32.3	+0.7772	0.5763	0.1063	+69	+ 6		
5 Ophiuchi	4.4	-0.05	0.4	21 0.9	17 32.7	+ 0 23.2	-0.2737	0.5798	0.0932	+ 9	-56		
B. A. C. 5866	5.9	0.08	0.5	21 21.4	19 4.6	+ 1 51.6	-0.0618	0.5807	0.0898	+20	-42		
52 Ophiuchi	6.4	-0.14	+0.7	-21 58.9	23 25.2	+ 6 2.3	+0.2125	0.5830	-0.0800	+34	-27		
58 Ophiuchi	4.8	0.18	0.6	21 38.3	24 2 44.6	+ 9 14.3	-0.3930	0.5848	0.0724	0	-64		
B. A. C. 6088	5.7	0.28	0.8	22 46.7	10 11.1	- 7 36.4	+0.3011	0.5882	0.0547	+37	-22		
B. A. C. 6125	6.2	0.30	0.3	21 27.2	12 19.6	- 5 33.0	-1.1651	0.5891	0.0495	-52	-90		
Bradley 2276	5.2	0.33	1.1	23 43.2	14 6.2	- 3 50.5	+1.0677	0.5899	0.0452	+66	+28		
14 Sagittarii	5.6	-0.34	+0.4	-21 44.3	15 9.1	- 2 50.0	-1.0033	0.5903	-0.0425	-39	-90		
24 Sagittarii	5.7	0.46	1.0	24 6.1	22 54.4	+ 4 37.0	+1.1521	0.5931	0.0231	+66	+37		
Bradley 2335	5.8	0.48	0.8	23 35.0	25 0 44.5	+ 6 22.7	+0.5865	0.5937	0.0184	+53	- 5		
26 Sagittarii	6.1	0.50	0.9	23 55.2	2 3.3	+ 7 38.4	+0.9058	0.5940	0.0150	+66	+15		
28 Sagittarii	5.6	0.51	0.3	22 29.3	3 50.7	+ 9 21.5	-0.5719	0.5945	0.0104	-15	-80		
30 Sagittarii	6.2	-0.54	+0.2	-22 16.1	5 37.2	+11 3.8	-0.8105	0.5950	-0.0058	-29	-90		
1 st Sagittarii	5.0	0.56	0.4	22 51.5	6 55.1	-11 41.4	-0.2155	0.5953	0.0024	+ 4	-52		
1 st Sagittarii	5.1	0.56	0.3	22 47.2	7 17.2	-11 20.1	-0.2893	0.5953	0.0015	- 1	-57		
Piazzi xviii, 225	5.9	0.57	0.5	23 17.5	7 38.0	-11 0.1	+0.2229	0.5954	-0.0006	+27	-26		
B. A. C. 6485	6.3	0.60	+0.2	22 49.5	9 50.7	- 8 52.8	-0.2450	0.5959	+0.0052	+ 2	-54		
o Sagittarii	3.9	-0.61	-0.2	-21 52.6	11 3.2	- 7 43.2	-1.1988	0.5961	+0.0083	-59	-90		
Lalande 35745	6.5	0.64	+0.3	23 20.1	12 37.4	- 6 12.7	+0.2968	0.5964	0.0124	+32	-22		
B. A. C. 6561	6.4	0.65	-0.3	21 48.7	14 6.2	- 4 47.5	-1.2262	0.5966	0.0163	-61	-90		
URANUS				22 47.9	16 11.4	- 2 47.2	-0.1866	0.5960	0.0215	+ 7	-50		
Piazzi xix, 61	5.5	0.70	-0.1	22 34.5	17 17.2	- 1 44.1	-0.3881	0.5971	0.0246	- 4	-64		
x ³ Sagittarii	5.5	-0.73	+0.3	-24 8.6	19 9.6	+ 0 3.8	+1.2494	0.5972	+0.0295	+66	+53		
50 Sagittarii	5.5	0.72	-0.5	21 57.6	19 30.8	+ 0 24.2	-0.9484	0.5972	0.0304	-36	-90		
53 Sagittarii	6.3	0.80	0.2	23 38.2	26 0 45.7	+ 5 26.4	+0.9428	0.5975	0.0441	+66	+18		
Bradley 2488	6.1	0.80	0.2	23 38.4	0 52.5	+ 5 32.9	+0.9506	0.5976	0.0444	+66	+19		
B. A. C. 6864	6.1	0.90	0.8	22 59.5	9 11.7	-10 27.8	+0.7524	0.5972	0.0658	+67	+ 5		
B. A. C. 6878	6.5	-0.91	-0.9	-22 51.3	10 6.9	- 9 34.8	+0.6763	0.5971	+0.0682	+64	0		
4 Capricorni	5.7	0.98	1.5	22 5.7	15 42.9	- 4 12.2	+0.3332	0.5965	0.0823	+41	-20		
17 Capricorni	5.8	1.10	2.2	21 51.0	27 2 47.8	+ 6 26.4	+1.1475	0.5941	0.1092	+68	+35		
20 Capricorni	6.2	1.14	3.3	19 23.6	8 9.2	+11 35.0	-0.6951	0.5927	0.1216	-12	-90		
4 Capricorni	4.8	1.17	3.2	20 13.2	10 3.4	-10 35.3	+0.3686	0.5921	0.1260	+47	-18		
30 Capricorni	5.4	1.21	-4.0	-18 22.3	15 29.5	- 5 21.9	-0.7631	0.5903	+0.1379	-14	-90		
31 Capricorni	6.3	1.21	4.2	17 51.0	15 37.2	5 14.4	-1.2679	0.5901	0.1381	-56	-90		
B. A. C. 7463	6.5	1.26	4.0	19 33.0	20 19.3	0 43.3	+1.1055	0.5885	0.1480	+70	+29		
7 Capricorni	3.7	1.28	4.9	17 4.8	28 0 25.6	+ 3 13.5	-0.7384	0.5869	0.1563	-11	-90		
8 Capricorni	2.9	1.30	5.3	16 32.8	3 15.3	+ 5 56.7	-0.8205	0.5857	0.1618	16	90		
B.D. -17° 6389	6.5	-1.32	-5.1	-17 16.6	4 33.2	+ 7 11.6	+0.1196	0.5851	+0.1643	+36	32		
29 Aquarii	6.5	1.36	5.4	17 24.6	9 34.0	-11 59.0	+1.0991	0.5830	0.1734	+73	+28		
39 Aquarii	6.2	1.37	6.3	14 38.9	13 42.6	- 7 59.7	-0.9217	0.5812	0.1806	-20	90		
45 Aquarii	6.1	1.38	6.6	13 46.1	16 26.9	- 5 21.7	-1.3002	0.5800	0.1850	-55	-90		
50 Aquarii	5.9	1.40	6.7	13 59.9	18 42.8	- 3 10.8	-0.6473	0.5790	0.1886	- 2	-85		
Bradley 2961	6.2	-1.41	6.9	-13 23.3	21 2.7	0 56.2	-0.8113	0.5780	+0.1922	-11	90		

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

THE STAR'S				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0. $\Delta\alpha$ $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle, H	j'	x'	y'	N.	S.
56 Aquarii	6.1	-1.42	-6.6	-15 3.5	d h m					
74 Aquarii	5.8	-1.46	-7.7	-12 6.5	28 21 9.0	-0 50.0	+0.8743	0.5779	+0.1923	+75 -10
					29 6 57.9	+8 37.2	-0.1122	0.5735	+0.2058	+29 -45

APRIL.

NEW MOON.										
85 Ceti	6.3	-1.46	-8.4	+10 20.9	2 14 3.6	-11 49.0	+0.5514	0.5499	+0.2064	+75 -6
35 Arietis	5.2	1.46	8.2	12 3.4	15 10.6	-10 44.2	-0.9887	0.5499	0.2052	-17 -78
W. B. ii, 1033	5.8	1.42	7.6	12 49.9	3 1 3.4	-1 11.2	+0.1738	0.5502	0.1932	+49 -25
Mayer 121	6.4	-1.34	-6.5	+15 7.6	15 27.6	-10 16.0	+0.4149	0.5511	+0.1730	+65 -10
Piazzii iii, 103	6.3	1.34	6.2	16 14.2	16 11.5	-10 33.5	-0.6246	0.5511	0.1718	+5 -70
Mayer 136	5.9	1.30	5.8	17 3.1	22 28.0	-4 29.7	-0.4376	0.5515	0.1620	+15 -56
B. A. C. 1239	6.3	1.27	5.6	17 2.1	1 52.8	-1 11.8	+0.1230	0.5517	0.1565	+46 -23
Piazzii iii, 215	5.8	1.27	5.4	17 56.0	1 57.0	-1 7.8	-0.8151	0.5518	0.1563	-7 -72
Piazzii iii, 249	6.1	-1.25	-5.4	+17 5.6	5 14.9	+2 3.5	+0.5809	0.5520	+0.1508	+79 +1
B.D. +16° 569	6.2	1.23	5.3	17 2.4	7 18.9	+4 3.3	+0.9461	0.5521	0.1473	+90 +24
B.D. +18° 624	6.0	1.21	4.8	18 31.3	10 53.4	+7 30.6	-0.1105	0.5524	0.1411	+33 -35
B. A. C. 1361	6.0	1.19	4.6	18 49.8	12 57.0	+9 29.9	-0.1511	0.5526	0.1375	+31 -36
♋ Tauri	4.3	1.18	4.8	17 43.0	13 12.8	+9 45.3	+1.0693	0.5525	0.1370	+90 +34
♉ Tauri	3.6	-1.18	-4.4	+18 58.5	14 37.1	+11 6.7	-0.0801	0.5526	+0.1345	+34 -32
B. A. C. 1417	6.4	1.16	4.1	19 41.5	17 50.3	-9 46.7	-0.4195	0.5528	0.1286	+16 -51
B.D. -20° 785	5.8	1.15	3.8	20 30.0	18 59.2	-8 40.1	-1.1358	0.5529	0.1266	-32 -70
B.D. +19° 811	6.2	1.07	3.8	19 20.1	5 2 35.8	-1 18.9	+1.0180	0.5532	0.1123	+90 +33
♉ Tauri	4.7	1.04	3.3	21 27.5	6 14.7	+2 12.5	-0.8624	0.5533	0.1053	-11 -69
B.D. +21° 755	6.3	-1.04	-3.0	+21 8.9	6 49.6	+2 46.2	-0.4690	0.5533	+0.1042	+13 -52
Mayer 198	6.3	1.02	3.4	19 40.8	7 23.2	+3 18.7	+1.1676	0.5533	0.1031	+90 +47
♉ Tauri	5.2	1.02	3.2	20 17.8	8 24.5	+4 18.0	+0.6093	0.5534	0.1011	+83 +8
105 Tauri	6.0	1.02	2.8	21 35.0	8 26.2	+4 19.6	-0.7712	0.5534	0.1011	-5 -68
107 Tauri	6.5	1.01	3.4	19 44.4	8 53.1	+4 45.6	+1.2558	0.5534	0.1002	+90 +57
108 Tauri	6.2	-0.99	-2.5	+22 10.8	11 50.7	+7 37.1	-1.0820	0.5534	+0.0944	-28 -68
♉ Tauri	5.1	0.97	2.4	22 0.1	13 34.6	+9 17.5	-0.7302	0.5534	0.0909	-3 -68
♉ Tauri	4.8	0.93	2.3	21 51.5	17 22.2	-11 2.6	-0.2463	0.5534	0.0834	+25 -36
♉ Tauri	3.0	0.88	2.4	21 5.2	21 55.4	-6 38.7	+0.9481	0.5533	0.0742	+90 +32
Piazzii v, 184	6.5	0.86	1.8	22 36.9	23 54.0	-4 44.2	-0.5643	0.5533	0.0702	+7 -56
Piazzii v, 192	6.0	-0.86	-1.6	+23 9.6	6 0 27.6	-4 11.7	-1.1172	0.5532	+0.0690	-32 -67
141 Tauri	6.3	0.76	1.5	22 23.9	8 48.8	+3 52.4	+0.2136	0.5528	0.0519	+52 -8
♊ Geminorum	4.1	0.75	1.2	23 16.1	9 53.9	+4 55.3	-0.6777	0.5527	0.0497	0 -63
B. A. C. 1970	6.0	0.72	1.4	22 12.3	12 23.0	+7 19.3	+0.5975	0.5525	0.0446	+83 +13
3 Geminorum	5.6	0.72	1.1	23 7.7	12 27.2	+7 23.4	-0.4060	0.5525	0.0444	+16 -42
6 Geminorum	6.3	-0.71	-1.2	+22 55.8	13 37.9	+8 31.7	-0.1381	0.5524	+0.0419	+31 -26
7 Geminorum	3.5	0.69	1.2	22 32.0	14 48.4	+9 39.8	+0.3413	0.5523	0.0395	+61 0
8 Geminorum	6.1	0.69	0.7	24 0.0	15 25.9	+10 16.0	-1.2338	0.5522	0.0382	-49 -66
9 Geminorum	6.2	0.69	0.8	23 46.3	15 44.1	+10 33.6	-0.9741	0.5522	0.0376	-20 -66
♊ Geminorum	3.2	0.65	1.1	22 33.7	18 28.8	-10 47.3	+0.4431	0.5519	0.0319	+68 +6
B. A. C. 2064	6.0	-0.64	-0.8	+23 22.7	19 38.9	-9 39.5	-0.4138	0.5518	+0.0295	+16 -42
B. A. C. 2238	5.8	0.49	0.2	23 42.7	7 7 44.2	+2 1.4	-0.5750	0.5501	+0.0044	+6 -51
NEPTUNE				22 6.1	10 31.5	+4 43.0	+1.1959	0.5493	-0.0013	+90 +58
♊ Geminorum	5.9	0.42	-0.4	22 46.5	13 52.1	+7 56.9	+0.4494	0.5490	0.0082	+68 +8
48 Geminorum	5.8	0.38	+0.2	24 17.0	17 7.9	+11 6.2	-1.2550	0.5483	0.0148	-55 -66
♊ Geminorum	3.5	-0.33	-0.5	+22 9.1	20 43.4	-9 25.5	+1.0238	0.5476	-0.0221	+90 +42
58 Geminorum	6.0	0.31	-0.1	23 7.4	22 15.4	-7 56.5	-0.0812	0.5472	0.0252	+34 -22
B.D. +23° 1744	6.4	0.26	0.0	23 5.1	2 36.7	-3 44.0	-0.1676	0.5463	0.0339	+29 -27
B.D. +23° 1780	6.3	0.21	+0.1	23 13.9	6 24.0	-0 4.2	-0.4736	0.5453	0.0414	+12 -47
B. A. C. 2544	6.3	0.20	-0.1	22 37.0	7 31.9	+1 1.4	+0.1571	0.5450	0.0436	+49 -11
82 Geminorum	6.3	-0.17	+0.2	+23 22.2	9 56.8	+3 21.5	-0.7847	0.5444	-0.0484	-7 -67

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.												
APRIL.												
THE STAR'S					AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.	
		$\Delta\alpha$	$\Delta\delta$									
μ^1 Cancri	6.2	-0.07	+0.1	+22 53.9	8 18 18.4	+11 26.7	-0.7377	0.5422	-0.0644	-4	-67	
μ^2 Cancri	5.5	-0.06	-0.3	21 50.9	19 0.8	-11 52.3	+0.3765	0.5420	0.0658	+63	-1	
Piazzii viii, 42	6.0	+0.01	0.5	21 2.3	9 0 59.9	-6 4.7	+0.8465	0.5403	0.0769	+90	+25	
η Cancri	5.4	0.08	0.6	20 45.2	6 54.9	-0 21.2	+0.6743	0.5386	0.0877	+90	+13	
39 Cancri	6.5	0.12	0.7	20 20.0	10 28.6	+3 5.7	+0.8170	0.5375	0.0940	+90	+21	
40 Cancri	6.5	+0.12	-0.7	+20 17.8	10 31.0	+3 8.0	+0.8534	0.5374	-0.0941	+90	+24	
B. A. C. 2919	6.5	0.12	0.8	19 59.7	10 36.3	+3 13.1	+1.1782	0.5374	0.0942	+90	+49	
γ Cancri	4.9	0.13	0.2	21 48.0	11 59.3	+4 33.5	-0.9509	0.5370	0.0966	-18	-68	
B.D. +16°, 2077	6.3	0.53	2.2	16 12.3	11 4 46.3	-3 55.6	-0.0418	0.5252	0.1593	+37	-33	
η Leonis	3.6	0.54	1.9	17 12.7	5 35.5	-3 7.9	-1.2828	0.5250	0.1603	-49	-73	
37 Leonis	5.5	+0.58	-2.8	+14 11.2	10 21.7	+1 29.6	+1.2731	0.5238	-0.1664	+90	+50	
42 Leonis	6.1	0.60	2.5	15 26.3	12 58.7	+4 1.9	-0.5467	0.5233	0.1696	+9	-65	
i Leonis	5.8	0.64	2.8	14 36.5	18 16.6	+9 10.3	-0.5477	0.5222	0.1759	+9	-66	
ω Virginis	5.4	0.85	4.5	8 38.5	13 4 36.4	-5 30.6	-0.6367	0.5180	0.2078	+5	-78	
ν Virginis	4.2	0.87	4.9	7 2.6	8 28.0	-1 45.8	+0.2965	0.5179	0.2104	+56	-22	
B.D. +6°, 2543	6.5	+0.91	-5.1	+6 4.3	17 47.9	+7 17.6	-0.6360	0.5182	-0.2159	+5	-80	
ϵ Virginis	5.1	0.94	5.4	3 49.4	14 2 27.1	-8 18.3	-0.0873	0.5189	0.2198	+34	-44	
Piazzii xii, 142	5.9	0.98	5.6	+2 21.6	11 47.3	+0 45.4	-0.5735	0.5202	0.2227	+8	-76	
80 Virginis	5.6	1.05	5.7	-4 55.8	15 16 55.8	+5 1.6	-0.6995	0.5279	0.2230	+85	-2	
Piazzii xiii, 174	6.4	1.06	5.7	5 2.2	21 7.8	+9 6.0	-0.1201	0.5295	0.2218	+32	-46	
η Virginis	6.5	+1.06	-5.6	-6 22.8	23 18.5	+11 12.6	+0.8229	0.5304	-0.2210	+84	+6	
B.D. -12°, 4134	6.4	1.06	4.6	12 27.3	17 4 9.3	-8 51.2	+1.0697	0.5444	0.2027	+78	+23	
ξ^1 Libræ	5.7	1.05	4.5	11 31.5	7 12.7	-5 53.8	-0.5208	0.5462	0.1999	+8	-72	
ξ^2 Libræ	5.7	1.05	4.6	11 2.4	8 19.9	-4 48.8	-1.2515	0.5467	0.1988	-44	-90	
α^1 Libræ	6.2	1.04	3.6	15 13.1	19 28.8	+5 57.8	+0.9684	0.5533	0.1862	+75	+16	
ζ^3 Libræ	6.0	+1.02	-3.3	-16 17.7	23 50.8	+10 10.9	+1.2887	0.5559	-0.1806	+74	+48	
γ Libræ	4.1	1.01	3.5	14 29.0	18 2 3.4	-11 41.1	-0.9931	0.5573	0.1776	-24	-90	
η Libræ	5.5	1.00	3.2	15 22.9	5 52.4	-7 59.9	-0.7266	0.5596	0.1722	-8	-90	
θ Libræ	4.4	0.98	2.8	16 27.6	10 10.6	-3 50.7	-0.3315	0.5622	0.1657	+13	-59	
49 Libræ	5.4	0.95	2.8	16 15.8	13 4.4	-1 3.1	-1.0088	0.5640	0.1611	-27	-90	
B.D. -17°, 4502	6.4	+0.95	-2.2	-18 5.8	17 12.4	+2 56.2	+0.2402	0.5666	-0.1543	+43	-26	
ν^2 Scorpii	3.9	0.96	2.0	19 13.4	18 5.2	+3 47.1	+1.2709	0.5672	0.1528	+71	+48	
B. A. C. 5408	6.4	0.94	2.3	18 18.0	19 15.3	+4 54.7	+0.1384	0.5679	0.1507	+37	-31	
ψ Ophiuchi	4.6	0.93	1.6	19 49.4	23 17.8	+8 48.5	+1.1177	0.5703	0.1436	+70	+30	
χ Ophiuchi	4.9	0.90	1.9	18 14.9	19 0 34.2	+10 2.2	-0.6911	0.5711	0.1412	-9	-90	
B. A. C. 5567	6.5	+0.87	-1.2	-20 13.8	6 17.6	-8 27.0	+0.5774	0.5744	-0.1303	+62	-7	
Bradley 2115	5.5	0.87	1.2	19 44.9	6 51.5	-7 54.3	+0.0080	0.5747	0.1292	+26	-39	
Mayer 679	5.9	0.83	0.9	20 15.7	11 41.4	-3 15.1	-0.0635	0.5775	0.1194	+22	-43	
B. A. C. 5700	6.1	0.82	1.1	19 23.7	13 13.4	-1 46.5	-1.1371	0.5783	0.1162	-43	-90	
B. A. C. 5746	6.2	0.79	0.7	20 21.9	16 24.0	+1 17.0	-0.4960	0.5801	0.1095	-2	-72	
Bradley 2162	6.3	+0.79	-0.4	-21 26.3	16 58.8	+1 50.5	+0.5435	0.5804	-0.1083	+58	-9	
ξ Ophiuchi	4.4	0.74	0.3	21 0.9	23 3.9	+7 41.8	-0.5097	0.5834	0.0948	-4	-74	
B. A. C. 5866	5.9	0.72	-0.1	21 21.4	20 0 34.9	+9 9.3	-0.2998	0.5841	0.0914	+7	-58	
52 Ophiuchi	6.4	0.68	+0.2	21 58.9	4 53.1	-10 42.4	-0.0297	0.5860	0.0814	+20	-41	
58 Ophiuchi	4.8	0.64	0.2	21 38.3	8 10.7	-7 32.4	-0.6365	0.5874	0.0736	-13	-87	
4 Sagittarii	4.8	+0.58	+1.3	-23 48.5	14 42.6	-1 15.7	+1.1541	0.5898	-0.0578	+66	+37	
B. A. C. 6088	5.7	0.57	0.9	22 46.7	15 34.4	-0 25.8	+0.0520	0.5901	0.0556	-22	-36	
Bradley 2276	5.2	0.53	1.3	23 43.2	19 28.3	+3 18.9	+0.8165	0.5912	0.0459	+66	+9	
14 Sagittarii	5.6	0.51	0.7	21 44.3	20 31.0	+4 19.2	-1.2553	0.5916	0.0432	-64	-90	
24 Sagittarii	5.7	0.42	1.6	24 6.1	21 4 15.2	+11 45.1	+0.8986	0.5934	0.0235	+66	+14	
Bradley 2335	5.8	+0.40	+1.5	-23 35.0	6 5.2	-10 29.2	+0.3319	0.5937	-0.0188	+35	20	
26 Sagittarii	6.1	0.38	1.7	23 55.1	7 24.1	-9 13.5	+0.6514	0.5939	0.0154	+59	-2	
28 Sagittarii	5.6	0.36	1.2	22 29.3	9 11.5	-7 30.3	-0.8299	0.5941	0.0107	-30	-90	
30 Sagittarii	6.2	0.33	1.2	22 16.1	10 58.1	-5 47.9	-1.0698	0.5944	0.0061	-47	-90	
ν^1 Sagittarii	5.0	0.32	1.4	22 51.5	12 16.1	-4 33.0	-0.4737	0.5945	0.0027	-11	-71	
ν^2 Sagittarii	5.1	+0.31	+1.4	-22 47.2	12 38.4	-4 11.6	-0.5477	0.5945	-0.0017	-14	-78	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
Piazzi xviii, 225	5.9	+0.31	+1.6	-23 17.5	21 12 59.2	- 3 51.6	-0.0341	0.5946	-0.0009	+12	-41
B. A. C. 6485	6.3	0.28	1.5	22 49.5	15 12.2	- 1 43.9	-0.5039	0.5947	+0.0049	-12	-74
Lalande 35745	6.5	0.24	1.7	23 20.1	17 59.6	+ 0 56.9	+0.0395	0.5948	0.0122	+18	-37
B. A. C. 6576	6.1	0.21	2.0	24 20.2	20 39.0	+ 3 29.9	+1.0988	0.5949	0.0192	+66	+31
URANUS				22 46.5	22 3.5	+ 4 51.1	-0.4585	0.5950	0.0229	- 8	-70
Piazzi xix, 61	5.5	+0.18	+1.5	-22 34.4	22 40.8	+ 5 26.9	-0.6487	0.5948	+0.0245	-18	-90
χ^3 Sagittarii	5.5	0.15	2.0	24 8.5	22 0 34.0	+ 7 15.6	+0.9965	0.5947	0.0294	+66	+22
50 Sagittarii	5.5	0.14	1.3	21 57.5	0 55.3	+ 7 36.1	-1.2119	0.5948	0.0303	-58	-90
53 Sagittarii	6.3	0.08	1.9	23 38.2	6 12.8	-11 19.1	+0.6895	0.5942	0.0440	+64	+ 1
Bradley 2488	6.1	+0.08	1.9	23 38.4	6 19.7	-11 12.5	+0.6973	0.5942	0.0443	+64	+ 1
B. A. C. 6864	6.1	-0.04	+1.7	-22 59.4	14 44.4	- 3 7.7	+0.5007	0.5928	+0.0657	+50	-11
B. A. C. 6878	6.5	0.05	1.6	22 51.2	15 40.2	- 2 14.1	+0.4243	0.5926	0.0680	+45	-15
4 Capricorni	5.7	0.13	1.2	22 5.7	21 20.9	+ 3 13.2	+0.0810	0.5912	0.0821	+26	-34
Piazzi xx, 146	6.2	0.20	1.5	22 41.8	23 1 55.7	+ 7 37.2	+1.0925	0.5899	0.0932	+67	+29
17 Capricorni	5.8	0.29	1.1	21 50.9	8 37.2	- 9 56.9	+0.9094	0.5877	0.1088	+68	+14
20 Capricorni	6.2	-0.35	+0.1	-19 23.5	14 5.1	- 4 41.7	-0.9475	0.5855	+0.1211	-27	-90
7 Capricorni	4.8	0.38	0.3	20 13.2	16 1.7	- 2 49.6	+0.1286	0.5848	0.1254	+32	-32
27 Capricorni	6.1	0.41	+0.5	20 55.6	18 6.7	- 0 49.3	+1.1091	0.5839	0.1298	+69	+30
30 Capricorni	5.4	0.45	-0.4	18 22.3	21 35.1	+ 2 31.1	-1.0108	0.5824	0.1371	-30	-90
B. A. C. 7463	6.5	0.52	0.2	19 33.0	24 2 31.8	+ 7 16.7	+0.8838	0.5802	0.1471	+70	+12
7 Capricorni	3.7	-0.56	-1.1	-17 4.7	6 44.3	+11 19.7	-0.9774	0.5783	+0.1553	-26	-90
6 Capricorni	2.9	0.59	1.4	16 32.7	9 38.4	- 9 52.7	-1.0574	0.5770	0.1607	-31	-90
B.D.-17°, 6389	6.5	0.61	1.2	17 16.5	10 58.4	- 8 35.6	-0.1043	0.5763	0.1632	+25	-45
29 Aquarii	6.5	0.66	1.3	17 24.5	16 7.3	- 3 38.2	+0.8942	0.5739	0.1722	+73	+12
39 Aquarii	6.2	0.71	2.3	14 38.9	20 23.0	+ 0 28.1	-1.1466	0.5719	0.1792	-36	-90
50 Aquarii	5.9	-0.76	-2.7	-13 59.8	25 1 31.7	+ 5 25.7	-0.8614	0.5695	+0.1872	-14	-90
Bradley 2961	6.2	0.78	2.9	13 23.2	3 55.7	+ 7 44.4	-1.0240	0.5684	0.1907	-25	-90
56 Aquarii	6.1	0.79	2.4	15 3.4	4 2.2	+ 7 50.8	+0.6841	0.5683	0.1909	+74	- 2
7 ^a Aquarii	4.4	0.88	2.9	14 4.7	12 26.0	- 8 3.5	+1.3475	0.5644	0.2022	+76	+61
74 Aquarii	5.8	0.88	3.6	12 6.4	14 8.6	- 6 24.5	-0.2985	0.5638	0.2043	+19	-57
B.D.-11°, 6032	6.3	-0.97	-4.1	-11 11.4	23 30.8	+ 1 38.0	+0.7382	0.5598	+0.2147	+78	+ 1
ψ^1 Aquarii	4.5	0.96	4.6	9 35.4	26 0 2.7	+ 3 8.8	-0.7658	0.5597	0.2152	- 5	-90
ψ^2 Aquarii	4.6	0.98	4.6	9 41.2	0 57.4	+ 4 1.7	-0.4723	0.5593	0.2161	+12	-69
ψ^3 Aquarii	5.2	0.98	4.5	10 6.9	1 25.6	+ 4 28.8	+0.0634	0.5591	0.2165	+41	-35
B.D.-10°, 6120	6.3	1.02	4.7	9 46.4	5 55.9	+ 8 49.9	+0.7024	0.5574	0.2206	+80	- 1
B. A. C. 8214	6.5	-1.04	-5.2	- 7 58.5	8 52.0	+11 39.9	-0.4674	0.5564	+0.2230	+13	-68
Mayer 1012	6.3	1.08	5.6	6 53.6	14 45.2	- 6 39.0	-0.2392	0.5544	0.2271	+25	-53
30 Piscium	4.7	1.13	5.9	6 31.6	20 51.9	- 0 44.7	+0.7901	0.5527	0.2308	+83	+ 4
33 Piscium	4.7	1.14	5.9	6 13.4	22 24.7	+ 0 45.0	+0.8401	0.5521	0.2315	+84	+ 7
Piazzi o, 1	6.0	1.15	6.1	5 45.7	27 0 41.5	+ 2 57.1	+0.8997	0.5516	0.2325	+84	+10
B. A. C. 81	6.3	-1.19	-6.8	- 2 43.8	7 13.0	+ 9 15.5	-0.6545	0.5500	+0.2348	+ 4	-84
14 Ceti	5.4	1.22	7.2	1 0.8	12 18.9	- 9 48.8	-1.2018	0.5490	0.2359	-33	-90
20 Ceti	4.9	1.27	7.1	- 1 38.7	20 26.0	- 1 57.8	+1.3613	0.5478	+0.2365	+88	+55

MAY.

				NEW	MOON.						
δ^3 Tauri	4.3	-1.37	-5.0	+17 43.0	1 22 27.7	- 3 11.8	+1.2335	0.5559	+0.1396	+90	+50
ϵ Tauri	3.6	1.38	4.7	18 58.5	23 51.1	- 1 51.3	+0.0892	0.5564	0.1372	+44	-23
B. A. C. 1417	6.4	-1.37	-4.4	+19 41.5	2 3 2.5	+ 1 13.5	-0.2437	0.5565	+0.1313	+26	-41
B.D. +20°, 785	5.8	1.37	4.2	20 30.0	4 10.6	+ 2 19.3	-0.9561	0.5566	0.1291	-17	-70
B.D. +19°, 811	6.2	1.32	4.0	19 20.1	11 42.0	+ 9 35.2	+1.2030	0.5574	0.1147	+90	+49
δ Tauri	4.7	1.30	3.6	21 27.5	15 18.2	-10 56.1	-0.6655	0.5577	0.1076	+ 2	-66
B.D. +21°, 755	6.3	1.31	3.4	21 8.9	15 52.7	-10 22.8	-0.2727	0.5577	0.1065	+24	-40
ζ Tauri	5.2	-1.29	-3.5	+20 17.8	17 26.4	- 8 52.2	+0.8040	0.5578	+0.1034	+90	+19

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.										
MAY.										
THE STAR'S					AT CONJUNCTION IN R. A.					Limiting
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N. S.
		$\Delta\alpha$	$\Delta\delta$							
		α	δ		d h m	h m				
105 Tauri	6.0	-1.30	-3.2	+21 35.0	2 17 28.0	- 8 50.7	-0.5714	0.5578	+0.1033	+ 7 -59
108 Tauri	6.2	1.28	2.9	22 10.8	20 49.8	- 5 35.7	-0.8761	0.5580	0.0966	-12 -68
<i>n</i> Tauri	5.1	1.27	2.9	22 0.1	22 32.4	- 3 56.8	-0.5233	0.5580	0.0931	+10 -55
ϵ Tauri	4.8	1.24	2.6	21 51.5	3 2 16.9	- 0 20.0	-0.0362	0.5581	0.0854	+37 -25
ζ Tauri	3.0	1.20	2.6	21 5.2	6 46.3	+ 4 0.1	+1.1588	0.5581	0.0761	+90 +49
Piazz v, 184	6.5	-1.20	-2.1	+22 36.9	8 43.2	+ 5 52.9	-0.3447	0.5581	+0.0720	+20 -41
Piazz v, 192	6.0	1.19	1.9	23 9.6	9 16.3	+ 6 24.9	-0.8947	0.5581	0.0708	-14 -67
141 Tauri	6.3	1.12	1.6	22 23.9	17 30.2	- 9 38.2	+0.4397	0.5576	0.0534	+68 + 4
ι Geminorum	4.1	1.12	1.3	23 16.1	18 34.4	- 8 36.2	-0.4465	0.5575	0.0511	+14 -46
B. A. C. 1970	6.0	1.08	1.5	22 12.3	21 1.3	- 6 14.3	+0.8255	0.5573	0.0459	+90 +26
3 Geminorum	5.6	-1.09	-1.2	+23 7.7	21 5.4	- 6 10.4	-0.1734	0.5572	+0.0458	+29 -28
6 Geminorum	6.3	1.08	1.2	22 55.8	22 15.2	- 5 3.0	+0.0945	0.5571	0.0433	+45 -14
η Geminorum	3.5	1.07	1.2	22 32.0	23 24.7	- 3 56.0	+0.5729	0.5570	0.0408	+80 +12
8 Geminorum	6.1	1.07	0.8	24 0.0	4 0 1.6	- 3 20.4	-0.9945	0.5569	0.0395	-22 -66
9 Geminorum	6.2	1.07	0.8	23 46.3	0 19.6	- 3 3.0	-0.7356	0.5569	0.0388	- 3 -66
μ Geminorum	3.2	-1.03	-1.1	+22 33.7	3 1.9	- 0 26.3	+0.6777	0.5566	+0.0330	+90 +19
B. A. C. 2064	6.0	1.03	0.7	23 22.7	4 10.9	+ 0 40.4	-0.1743	0.5563	0.0306	+29 -27
B. A. C. 2238	5.8	0.91	-0.1	23 42.7	16 6.2	-11 48.9	-0.3250	0.5543	+0.0051	+21 -34
ω Geminorum	5.2	0.86	+0.4	24 20.8	20 48.6	- 7 16.1	-1.0211	0.5532	-0.0048	-24 -66
44 Geminorum	5.9	0.83	-0.1	22 46.5	22 9.3	- 5 58.2	+0.6903	0.5529	0.0077	+90 +22
48 Geminorum	5.8	-0.81	+0.6	+24 17.0	5 1 22.6	- 2 51.3	-0.9963	0.5521	-0.0144	-22 -66
58 Geminorum	6.0	0.74	0.4	23 7.4	6 26.4	+ 2 2.3	+0.1758	0.5507	0.0249	+50 - 8
B.D.+23°, 1744	6.4	0.69	0.6	23 5.1	10 44.8	+ 6 12.0	+0.0918	0.5494	0.0338	+45 -13
B.D.+23°, 1780	6.3	0.65	0.8	23 13.9	14 29.7	+ 9 49.3	-0.2116	0.5482	0.0414	+27 -30
B. A. C. 2544	6.3	0.63	0.7	22 37.0	15 36.8	+10 54.2	+0.4175	0.5479	0.0436	+67 + 3
82 Geminorum	6.3	-0.61	+1.0	+23 22.2	18 0.3	-10 47.1	-0.5203	0.5470	-0.0485	+10 -51
μ^1 Cancri	6.2	0.52	1.1	22 53.9	6 2 17.5	- 2' 46.3	-0.4712	0.5442	0.0646	+12 -49
μ^2 Cancri	5.5	0.50	0.8	21 51.0	2 59.5	- 2 5.7	+0.6402	0.5439	0.0659	+88 +13
B.D.+23°, 1913	6.4	0.47	1.4	23 24.9	5 45.5	+ 0 34.8	-1.2767	0.5429	0.0712	-59 -67
Piazz viii, 42	6.0	0.42	0.7	21 2.3	8 56.0	+ 3 39.1	+1.1104	0.5418	0.0772	+90 +44
η Cancri	5.4	-0.35	+0.7	+20 45.3	14 48.8	+ 9 20.4	+0.9394	0.5395	-0.0880	+90 +29
39 Cancri	6.5	0.31	0.7	20 20.0	18 21.4	-11 13.8	+1.0822	0.5382	0.0943	+90 +39
40 Cancri	6.5	0.31	0.7	20 17.8	18 23.8	-11 11.5	+1.1185	0.5382	0.0943	+90 +42
γ Cancri	4.9	-0.30	+1.2	21 48.0	19 51.8	- 9 46.3	-0.6830	0.5375	0.0669	+ 1 -66
B.D.+16°, 2077	6.3	+0.18	-0.2	16 12.3	8 12 38.8	+ 5 44.7	+0.2101	0.5229	0.1594	+52 -20
η Leonis	3.6	+0.19	+0.1	+17 12.7	13 28.2	+ 6 32.6	-1.0325	0.5227	-0.1605	-22 -73
42 Leonis	6.1	0.27	-0.4	15 26.4	20 53.5	-10 15.5	-0.3018	0.5205	0.1697	+23 -50
ι Leonis	5.8	0.32	0.7	14 36.6	9 2 13.3	- 5 5.2	-0.3077	0.5192	0.1759	+22 -51
ω Virginis	5.4	0.65	2.6	8 38.6	10 12 48.3	+ 4 29.1	-0.4400	0.5144	0.2079	+16 -64
ξ Virginis	4.8	0.69	2.6	8 46.1	16 23.2	+ 7 57.7	-1.3255	0.5143	0.2103	-49 -81
ν Virginis	4.2	+0.69	-3.2	+ 7 2.6	16 41.8	+ 8 15.8	+0.4883	0.5143	-0.2105	+70 -12
π Virginis	4.6	0.76	3.0	7 7.6	11 0 35.1	- 8 4.8	-1.2802	0.5146	0.2153	-42 -83
B.D.+6°, 2543	6.5	0.76	3.4	6 4.3	2 5.9	- 6 36.6	-0.4609	0.5147	0.2161	+15 -66
ϵ Virginis	5.1	0.83	3.9	3 49.4	10 48.7	+ 1 51.1	+0.0726	0.5157	0.2203	+43 -35
Piazz xii, 142	5.9	0.91	4.2	+ 2 21.6	20 12.1	+10 58.0	-0.4314	0.5174	0.2234	+16 -65
80 Virginis	5.6	+1.11	-5.3	- 4 55.8	13 1 24.4	- 8 42.0	+0.7782	0.5271	-0.2247	+75 + 3
Piazz xiii, 174	6.4	1.14	5.2	5 2.2	5 36.0	- 4 38.0	-0.0484	0.5290	0.2238	+36 -42
n Virginis	6.5	1.16	5.4	6 22.8	7 46.4	- 2 31.6	+0.8866	0.5301	0.2231	+84 + 9
B. D.-12°, 4134	6.4	1.32	5.0	12 27.3	14 12 25.3	+ 1 12.5	+1.0658	0.5468	0.2059	+78 +23
ϵ^1 Libræ	5.7	1.32	4.8	11 31.5	15 26.6	+ 4 7.8	-0.5209	0.5489	0.2031	+ 7 -73
ϵ^2 Libræ	5.7	+1.33	-4.7	-11 2.4	16 33.0	+ 5 12.0	-1.2488	0.5496	-0.2020	-43 -90
α^1 Libræ	6.2	1.38	4.3	15 13.1	15 3 32.8	- 8 10.4	+0.9315	0.5573	0.1897	+75 +13
ζ^3 Libræ	6.0	1.40	4.1	16 17.7	7 50.6	- 4 1.5	+1.2399	0.5604	0.1841	+74 +40
ζ^4 Libræ	5.6	1.40	4.0	16 32.6	8 50.3	- 3 3.8	+1.3121	0.5611	0.1828	+73 +53
γ Libræ	4.1	1.39	3.9	14 29.0	10 1.0	- 1 55.7	-1.0274	0.5619	0.1812	-26 -90
η Libræ	5.5	+1.40	-3.8	-15 22.9	13 46.0	+ 1 41.5	-0.7703	0.5646	-0.1758	-10 -90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	y'	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m				'	'
θ Libræ	4.4	+1.42	-3.4	-16 27.6	15 17 59.4	+ 5 45.9	-0.3869	0.5677	-0.1693	+11	-63
49 Libræ	5.4	1.40	3.4	16 15.8	20 49.9	+ 8 30.2	-1.0633	0.5697	0.1647	-31	-90
B. D.-17° 4502	6.4	1.42	2.9	18 5.8	16 0 53.0	-11 35.5	+0.1663	0.5726	0.1578	+39	-30
ν Scorpii	3.9	1.44	2.8	19 13.4	1 44.7	-10 45.7	+1.1854	0.5732	0.1563	+71	+36
B. A. C. 5408	6.4	1.43	2.8	18 18.0	2 53.4	-9 39.5	+0.0617	0.5740	0.1543	+33	-36
ψ Ophiuchi	4.6	+1.44	-2.4	-19 49.4	6 50.7	- 5 50.9	+1.0242	0.5768	-0.1470	+70	+22
χ Ophiuchi	4.9	1.42	2.4	18 14.9	8 5.5	- 4 38.9	-0.7689	0.5776	0.1447	-14	-90
B. A. C. 5567	6.5	1.43	1.8	20 13.8	13 41.4	+ 0 44.4	+0.4770	0.5814	0.1337	+55	-13
Bradley 2115	5.5	1.43	1.8	19 44.9	14 14.5	+ 1 16.3	-0.0876	0.5817	0.1325	+22	-44
Mayer 679	5.9	1.42	1.4	20 15.8	18 57.8	+ 5 48.9	-0.1662	0.5847	0.1226	+17	-49
B. A. C. 5700	6.1	+1.41	-1.4	-19 23.7	20 27.6	+ 7 15.3	-1.2311	0.5856	-0.1194	-53	-90
B. A. C. 5746	6.2	1.41	1.0	20 22.0	23 33.7	+10 14.3	-0.6015	0.5874	0.1126	- 7	-83
Bradley 2162	6.3	1.41	-0.9	21 26.3	17 0 7.6	+10 46.9	+0.4261	0.5878	0.1113	+49	-15
ξ Ophiuchi	4.4	1.39	0.5	21 0.9	6 4.1	- 7 30.4	-0.6251	0.5910	0.0976	-10	-86
B. A. C. 5866	5.9	1.38	-0.3	21 21.4	7 32.8	- 6 5.2	-0.4195	0.5918	0.0942	+ 1	-67
52 Ophiuchi	6.4	+1.37	+0.2	-21 58.9	11 44.7	- 2 3.2	-0.1584	0.5938	-0.0840	+14	-49
58 Ophiuchi	4.8	1.34	0.3	21 38.3	14 57.6	+ 1 2.2	-0.7634	0.5952	0.0761	-20	-90
4 Sagittarii	4.8	1.33	1.3	23 48.5	21 19.9	+ 7 9.2	+1.0003	0.5977	0.0599	+66	+22
B. A. C. 6088	5.7	1.31	1.1	22 46.7	22 10.4	+ 7 57.6	-0.0917	0.5979	0.0577	+15	-45
Bradley 2276	5.2	1.29	1.6	23 43.2	18 1 58.7	+11 36.8	+0.6604	0.5991	0.0478	+61	- 2
24 Sagittarii	5.7	+1.22	+2.4	-24 6.1	10 33.1	- 4 9.6	+0.7319	0.6009	-0.0250	+66	+ 3
Bradley 2335	5.8	1.20	2.4	23 35.0	12 20.5	- 2 26.5	+0.1686	0.6012	0.0201	+26	-30
26 Sagittarii	6.1	1.20	2.6	23 55.1	13 37.6	- 1 12.6	+0.4839	0.6013	0.0167	+45	-12
28 Sagittarii	5.6	1.16	2.4	22 29.3	15 22.6	+ 0 28.2	-0.9856	0.6015	0.0120	-40	-90
30 Sagittarii	6.2	1.14	2.4	22 16.0	17 6.8	+ 2 8.2	-1.2250	0.6016	0.0072	-61	-90
ν Sagittarii	5.0	+1.14	+2.6	-22 51.5	18 23.1	+ 3 21.4	-0.6357	0.6017	-0.0038	-19	-68
ν Sagittarii	5.1	1.14	2.6	22 47.2	18 44.8	+ 3 42.2	-0.7095	0.6017	0.0028	-23	-90
Piazzi xviii, 225	5.9	1.13	2.8	23 17.4	19 5.2	+ 4 1.7	-0.2009	0.6017	-0.0019	+ 4	-52
B. A. C. 6485	6.3	1.11	2.8	22 49.5	21 15.4	+ 6 6.7	-0.6687	0.6017	+0.0040	-21	-90
Lalande 35745	6.5	1.08	3.1	23 20.1	23 59.1	+ 8 43.7	-0.1327	0.6017	0.0114	+ 8	-47
B. A. C. 6576	6.1	+1.06	+3.5	-24 20.1	19 2 35.2	+11 13.5	+0.9154	0.6015	+0.0185	+66	+16
URANUS				22 49.7	3 25.5	-11 58.1	-0.5886	0.6024	0.0209	-15	-82
Piazzi xix, 61	5.5	1.03	3.2	22 34.4	4 34.6	-10 51.8	-0.8195	0.6013	0.0239	-28	-90
γ Sagittarii	5.5	1.02	3.7	24 8.5	6 25.5	- 9 5.4	-0.8110	0.6011	0.0289	+66	+ 8
53 Sagittarii	6.3	0.95	3.9	23 38.2	11 57.9	- 3 46.5	+0.5024	0.6001	0.0437	+48	-11
Bradley 2488	6.1	+0.95	+3.9	-23 38.3	12 4.7	- 3 39.9	+0.5100	0.6001	+0.0440	+49	-10
B. A. C. 6864	6.1	0.84	4.2	22 59.4	20 20.7	+ 4 16.0	+0.3093	0.5978	0.0657	+38	-22
B. A. C. 6878	6.5	0.83	4.2	22 51.2	21 15.7	+ 5 8.8	+0.2329	0.5975	0.0681	+34	-26
4 Capricorni	5.7	0.76	4.2	22 5.6	20 2 51.4	+10 31.1	-0.1117	0.5955	0.0823	+16	-46
Piazzi xx, 146	6.2	0.70	4.6	22 41.7	7 22.6	- 9 8.5	+0.8926	0.5936	0.0934	+67	+13
17 Capricorni	5.8	+0.61	+4.5	-21 50.9	13 59.7	- 2 47.0	+0.7083	0.5905	+0.1091	+68	+ 1
20 Capricorni	6.2	0.52	3.8	19 23.5	19 24.7	+ 2 25.3	-1.1445	0.5877	0.1214	-43	-90
η Capricorni	4.8	0.50	4.1	20 13.1	21 20.5	+ 4 16.6	-0.0719	0.5866	0.1257	+22	-43
27 Capricorni	6.1	0.48	4.4	20 55.5	23 24.6	+ 6 15.9	+0.9059	0.5855	0.1301	+69	+13
30 Capricorni	5.4	0.42	3.6	18 22.2	21 51.8	+ 9 35.2	-1.2107	0.5836	0.1374	-48	-90
B. A. C. 7463	6.5	+0.36	+4.1	-19 32.9	7 47.4	- 9 40.4	+0.6807	0.5807	+0.1474	+69	- 1
γ Capricorni	3.7	0.30	3.3	17 4.6	11 59.4	- 5 37.9	-1.1797	0.5782	0.1555	-43	-90
κ Capricorni	4.8	0.29	4.0	19 17.1	13 2.4	- 4 37.3	+1.2251	0.5776	0.1574	+71	+39
δ Capricorni	2.9	0.27	3.0	16 32.7	14 53.4	- 2 50.5	-1.2601	0.5765	0.1608	-51	-90
B. D.-17° 6389	6.5	0.24	3.4	17 16.4	16 13.5	- 1 33.3	-0.3068	0.5757	0.1632	+14	-58
29 Aquarii	6.5	+0.17	+3.4	-17 24.4	21 22.8	+ 3 24.6	+0.6933	0.5725	+0.1722	+72	- 1
50 Aquarii	5.9	0.05	2.1	13 59.7	22 6 49.8	-11 28.9	-1.0636	0.5669	0.1869	-28	-90
Bradley 2961	6.2	0.03	2.0	13 23.2	9 14.7	- 9 9.2	-1.2261	0.5655	0.1904	-43	-90
56 Aquarii	6.1	+0.02	2.6	15 3.3	9 21.2	- 9 3.0	+0.4873	0.5654	0.1905	+62	-13
ν Aquarii	4.4	0.09	2.2	14 4.7	17 49.5	- 0 52.6	+1.1583	0.5606	0.2015	+76	+31
74 Aquarii	5.8	-0.10	+1.5	-12 6.3	19 33.3	+ 0 47.6	-0.4940	0.5597	+0.2036	+ 9	-71

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.											
MAY.											
THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
B.D.-11°, 6032	6.3	-0.22	+1.0	-11 11.3	23 5 2.5	+ 9 57.0	+0.5547	0.5548	+0.2137	+70	-10
♊ Aquarii	4.5	0.21	0.5	9 35.3	5 34.9	+10 28.3	-0.9578	0.5546	0.2142	-17	-90
♊ Aquarii	4.6	0.23	0.5	9 41.1	6 30.4	+11 22.0	-0.6618	0.5541	0.2150	+ 1	-86
♊ Aquarii	5.2	0.24	0.6	10 6.8	6 59.0	+11 49.5	-0.1226	0.5539	0.2155	+30	-46
B.D.-10°, 6120	6.3	0.29	+0.5	9 46.3	11 33.5	- 7 45.2	+0.5244	0.5518	0.2194	+69	-11
B. A. C. 8214	6.5	-0.32	-0.2	- 7 58.4	14 32.6	- 4 52.2	-0.6506	0.5505	+0.2217	+ 2	-84
Mayer 1012	6.3	0.38	0.6	6 53.5	20 32.0	+ 0 55.2	-0.4150	0.5481	0.2258	+16	-64
30 Piscium	4.7	0.45	0.8	6 31.5	24 2 45.8	+ 6 56.7	+0.6288	0.5460	0.2292	+79	- 6
33 Piscium	4.7	0.46	0.9	6 13.3	4 20.5	+ 8 28.2	+0.6816	0.5456	0.2300	+84	- 3
Piazz i o 1	6.0	0.49	1.1	5 45.6	6 40.1	+10 43.2	+0.7444	0.5447	0.2309	+82	+ 2
B. A. C. 81	6.3	-0.55	-2.2	- 2 43.7	13 20.0	- 6 50.0	-0.8148	0.5429	+0.2331	- 5	-90
14 Ceti	5.4	0.60	2.7	1 0.7	18 32.7	- 1 47.5	-1.3603	0.5417	0.2342	-54	-90
20 Ceti	4.9	0.68	2.6	- 1 38.7	25 2 50.9	+ 6 14.6	+1.2384	0.5403	0.2348	+88	+36
26 Ceti	6.0	0.71	3.3	+ 0 52.4	7 59.3	+11 13.0	-0.1478	0.5398	0.2345	+31	-47
33 Ceti	6.1	0.74	3.6	1 57.3	11 12.6	- 9 39.9	-0.5098	0.5395	0.2340	+12	-71
♊ Piscium	5.1	-0.77	-4.0	+ 3 7.7	14 40.0	- 6 19.1	-0.9145	0.5393	+0.2333	-11	-87
Lalande 2632	6.5	0.81	3.9	3 3.4	19 0.9	- 2 6.6	+0.1713	0.5392	0.2321	+49	-30
♊ Piscium	4.6	0.86	4.4	5 1.3	26 1 57.8	+ 4 36.9	-0.2592	0.5393	0.2294	+25	-53
Piazz i i, 249	6.5	0.94	4.8	7 17.6	13 8.3	- 8 34.0	-0.0903	0.5402	0.2230	+34	-43
64 Ceti	5.8	0.96	5.0	8 8.3	16 14.4	- 5 33.9	-0.2818	0.5406	0.2208	+24	-53
♊ Ceti	4.5	-0.96	-5.0	+ 8 24.8	17 1.0	- 4 48.8	-0.3979	0.5406	+0.2202	+19	-61
♊ Arietis	5.5	1.00	5.3	10 11.6	22 37.3	+ 0 36.6	-1.0328	0.5415	0.2157	-20	-80
25 Arietis	6.5	1.02	5.3	9 47.3	23 51.8	+ 1 48.7	-0.3440	0.5416	0.2147	+21	-57
B. F. 310	6.3	1.02	5.1	9 9.2	27 0 54.0	+ 2 48.8	+0.5415	0.5418	0.2138	+74	- 8
85 Ceti	6.3	1.05	5.2	10 20.9	6 59.7	+ 8 42.7	+0.5787	0.5429	0.2079	+78	- 6
38 Arietis	5.2	-1.06	-5.4	+12 3.5	8 8.4	+ 9 49.2	-0.9739	0.5432	+0.2068	-16	-78
NEW MOON.											
♊ Geminorum	3.2	-1.14	-1.1	+22 33.7	31 11 14.8	+ 9 34.4	+0.7820	0.5589	+0.0343	+90	+25
B. A. C. 2064	6.0	-1.14	-0.9	23 22.7	12 23.5	+10 40.8	-0.0689	0.5587	0.0318	+35	-21
MARS				+24 22.9	15 57.7	- 9 52.4	-1.0638	0.5293	+0.0254	-25	-66
JUNE.											
B. A. C. 2238	5.8	-1.06	-0.1	+23 42.7	1 0 15.0	- 1 52.3	-0.2070	0.5569	+0.0062	+27	-27
♊ Geminorum	5.2	-1.04	+0.3	+24 20.8	4 55.7	+ 2 38.8	-0.8982	0.5560	-0.0039	-14	-66
44 Geminorum	5.9	1.02	0.0	22 46.5	6 15.9	+ 3 56.2	+0.8139	0.5556	0.0068	+90	+29
48 Geminorum	5.8	1.01	0.5	24 17.0	9 27.9	+ 7 1.8	-0.8691	0.5549	0.0136	-12	-66
58 Geminorum	6.0	0.96	0.6	23 7.4	14 29.8	+11 53.4	+0.3070	0.5534	0.0242	+59	0
B.D.+23°, 1744	6.4	0.92	0.8	23 5.1	18 46.5	- 7 58.6	+0.2269	0.5524	0.0332	+53	- 6
B.D.+23°, 1780	6.3	-0.90	+1.0	+23 13.9	22 29.9	4 22.8	-0.0734	0.5510	-0.0408	+35	-22
B. A. C. 2544	6.3	0.88	0.9	22 37.0	23 36.6	- 3 18.3	+0.5563	0.5506	0.0431	+70	+11
82 Geminorum	6.3	0.86	1.2	23 22.2	2 1 59.1	- 1 0.5	-0.3792	0.5498	0.0479	+18	-41
B.D.+23°, 1866	6.4	0.81	1.6	23 50.2	7 44.6	+ 4 33.5	-1.2037	0.5477	0.0594	-43	-66
♊ Cancri	6.2	0.78	1.5	22 53.9	10 13.2	+ 6 57.2	-0.3241	0.5467	0.0643	-21	-30
♊ Cancri	5.5	-0.77	+1.3	+21 51.0	10 55.0	+ 7 37.6	+0.7873	0.5464	-0.0656	+90	+22
B.D.+23°, 1913	6.4	0.75	1.8	23 24.9	13 40.0	+10 17.1	-1.1270	0.5453	0.0709	-33	-67
Piazz i viii, 42	6.0	0.70	1.3	21 2.3	16 49.4	-10 39.7	+1.2614	0.5441	0.0769	+90	+61
♊ Cancri	5.4	0.65	1.5	20 45.3	22 40.4	- 5 0.3	+1.0942	0.5416	0.0878	+90	+41
39 Cancri	6.5	0.61	1.5	20 20.0	8 2 11.9	- 1 35.5	+1.2392	0.5401	0.0942	+90	+56
40 Cancri	6.5	-0.61	+1.5	+20 17.8	2 14.4	- 1 33.1	+1.2755	0.5401	-0.0943	-90	+62
♊ Cancri	4.9	0.60	2.0	21 48.0	3 42.0	- 0 8.4	-0.5253	0.5394	0.0968	+10	-56
B. D.+16°, 2077	6.3	0.15	1.4	16 12.4	4 20 27.0	- 8 39.4	+0.3813	0.5220	0.1592	-63	-11
♊ Leonis	3.6	0.14	1.7	17 12.7	21 16.6	- 7 51.3	-0.8642	0.5218	0.1602	-10	-73
42 Leonis	6.1	-0.06	1.3	15 26.4	5 4 43.7	- 0 37.5	-0.1316	0.5191	0.1693	+32	-40
♊ Leonis	5.8	0.00	+1.1	+14 36.6	10 5.3	+ 4 34.6	-0.1379	0.5173	-0.1755	+32	-41

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.
		Δα	Δδ		d h m	h m				°	°
Leonis	4.1	+0.30	+0.1	+11 2.2	6 13 15.7	+ 6 57.6	-1.3305	0.5111	-0.2011	-51	-79
Virginis	5.4	0.38	-0.6	8 38.6	21 0.1	- 9 31.4	-0.2813	0.5103	0.2067	+24	-53
Virginis	4.8	0.42	0.5	8 46.2	7 0 37.8	- 5 59.8	-1.1732	0.5101	0.2092	-30	-81
Virginis	4.2	0.42	1.2	7 2.7	0 56.6	- 5 41.5	+0.6496	0.5101	0.2094	+84	- 3
Virginis	4.6	0.50	1.0	7 7.6	8 56.3	+ 2 4.4	-1.1328	0.5100	0.2140	-27	-83
B.D.+6°, 2543	6.5	+0.52	-1.4	+ 6 4.3	10 28.5	+ 3 33.9	-0.3103	0.5101	-0.2148	+23	-56
Virginis	5.6	0.55	1.2	6 19.1	13 50.3	+ 6 50.0	-1.3030	0.5102	0.2164	-44	-84
Virginis	5.1	0.60	2.0	3 49.5	19 18.9	-11 50.8	+0.2198	0.5107	0.2189	+52	-27
Piazzi xii, 142	5.9	0.71	2.4	+ 2 21.6	8 4 50.8	- 2 35.4	-0.2948	0.5122	0.2221	+24	-56
80 Virginis	5.6	1.01	4.0	- 4 55.7	9 10 28.8	+ 2 10.4	+0.8904	0.5223	0.2237	+85	+ 9
Piazzi xiii, 174	6.4	+1.05	-4.0	- 5 2.2	14 43.6	+ 6 17.8	+0.5557	0.5244	-0.2228	+42	-36
Virginis	6.5	1.08	4.2	6 22.8	16 55.7	+ 8 25.7	+0.9914	0.5255	0.2222	+84	+16
B.D.-12°, 4134	6.4	1.37	4.7	12 27.3	10 21 50.6	-11 34.1	+1.1323	0.5443	0.2061	+78	+28
Librae	5.7	1.38	4.3	11 31.5	11 0 52.7	- 8 38.1	-0.4588	0.5465	0.2034	+11	-68
Librae	5.7	1.39	4.1	11 2.4	1 59.4	- 7 33.6	-1.1881	0.5474	0.2024	-36	-90
Librae	6.2	+1.51	-4.3	-15 13.1	13 0.9	+ 3 5.6	+0.9766	0.5561	-0.1905	+75	+17
Librae	6.0	1.55	4.2	16 17.7	17 18.7	+ 7 14.5	+1.2783	0.5597	0.1851	+74	+46
Librae	4.1	1.55	3.7	14 29.0	19 28.9	+ 9 20.2	-0.9865	0.5615	0.1823	-23	-90
Librae	5.5	1.58	3.6	15 22.9	23 13.5	-11 3.1	-0.7345	0.5647	0.1770	- 8	-90
Librae	4.4	1.62	3.4	16 27.6	12 3 26.0	- 6 59.5	-0.3572	0.5682	0.1707	+12	-61
Librae	5.4	+1.62	-3.3	-16 15.8	6 15.6	- 4 16.1	-1.0343	0.5706	-0.1662	-29	-90
B.D.-17°, 4502	6.4	1.68	3.1	18 5.8	10 17.2	- 0 23.2	-0.1853	0.5740	0.1594	+40	-29
Scorpii	3.9	1.69	3.2	19 13.4	11 8.5	+ 0 26.1	+1.1985	0.5747	0.1580	+71	+38
B. A. C. 5408	6.4	1.69	3.0	18 18.0	12 16.7	+ 1 31.8	+0.0787	0.5757	0.1559	+34	-35
Ophiuchi	4.6	1.73	2.8	19 49.4	16 12.1	+ 5 18.6	+1.0310	0.5789	0.1488	+70	+22
Ophiuchi	4.9	+1.72	-2.5	-18 14.9	17 26.1	+ 6 29.8	-0.7535	0.5800	-0.1464	-11	-90
B. A. C. 5567	6.5	1.76	2.1	20 13.8	22 58.4	+11 49.5	+0.4783	0.5844	0.1355	+55	-13
Bradley 2115	5.5	1.76	2.0	19 44.9	23 31.1	-11 39.0	-0.0832	0.5848	0.1344	-23	-44
Mayer 679	5.9	1.78	1.6	20 15.8	13 4 10.8	- 7 10.1	-0.1666	0.5884	0.1246	+17	-49
B. A. C. 5700	6.1	1.78	1.4	19 23.7	5 39.4	- 5 45.0	-1.2253	0.5896	0.1214	-52	-90
B. A. C. 5746	6.2	+1.80	-1.2	-20 22.0	8 42.9	- 2 48.6	-0.6036	0.5918	-0.1146	- 7	-83
Bradley 2162	6.3	1.81	1.2	21 26.3	9 16.3	- 2 16.5	+0.4153	0.5922	0.1133	+48	-16
Ophiuchi	4.4	1.83	0.6	21 0.9	15 6.9	+ 3 20.3	-0.6336	0.5962	0.0996	-11	-87
B. A. C. 5866	5.9	1.83	-0.4	21 21.4	16 34.1	+ 4 44.0	-0.4315	0.5972	0.0961	0	-68
52 Ophiuchi	6.4	1.84	+0.1	21 58.9	20 41.3	+ 8 41.3	-0.1768	0.5996	0.0859	+14	-50
Ophiuchi	4.8	+1.84	+0.4	-21 38.3	23 50.3	+11 42.7	-0.7792	0.6014	-0.0779	-21	-90
Sagittarii	4.8	1.88	1.2	23 48.5	14 6 4.6	- 6 18.2	+0.9601	0.6045	0.0616	+66	+19
B. A. C. 6088	5.7	1.85	1.2	22 46.7	6 54.0	- 5 30.9	-0.1212	0.6049	0.0594	+13	-46
Bradley 2276	5.2	1.86	1.7	23 43.2	10 37.0	- 1 57.0	+0.6190	0.6065	0.0494	+58	- 4
24 Sagittarii	5.7	1.85	2.7	24 6.0	18 59.0	+ 6 4.2	+0.6813	0.6091	0.0262	+62	0
Bradley 2335	5.8	+1.83	+2.9	-23 35.0	20 43.7	+ 7 44.6	+0.1229	0.6094	-0.0214	+23	-32
26 Sagittarii	6.1	1.83	3.0	23 55.1	21 58.8	+ 8 56.5	+0.4332	0.6097	0.0178	+42	-15
28 Sagittarii	5.6	1.81	3.1	22 29.3	23 41.1	+10 34.6	-1.0199	0.6100	0.0130	-43	-90
30 Sagittarii	6.2	1.80	3.3	22 16.0	15 1 22.5	-11 48.3	-1.2578	0.6103	0.0082	-66	-90
11 Sagittarii	5.0	1.80	3.5	22 51.5	2 36.8	-10 37.1	-0.6768	0.6104	0.0047	-21	-90
12 Sagittarii	5.1	+1.80	+3.5	-22 47.1	2 57.9	-10 16.9	-0.7500	0.6104	-0.0037	-26	-90
Piazzi xviii, 225	5.9	1.80	3.6	23 17.4	3 17.7	- 9 58.0	-0.2480	0.6105	-0.0028	+ 2	-55
B. A. C. 6485	6.3	1.79	3.8	22 49.5	5 24.4	- 7 56.5	-0.7117	0.6106	+0.0032	-24	-90
Lalande 35745	6.5	1.78	4.1	23 20.1	8 3.6	- 5 24.0	-0.1847	0.6107	0.0108	+ 6	-51
URANUS	..	..	..	22 56.2	10 4.4	- 3 28.2	-0.5537	0.6124	0.0167	-14	-79
B. A. C. 6576	6.1	+1.78	+4.5	-24 20.1	10 35.3	- 2 58.7	+0.8479	0.6107	+0.0180	+66	+11
Piazzi xix, 61	5.5	1.74	4.5	22 34.4	12 31.3	- 1 7.5	-0.8662	0.6105	0.0235	-31	-90
3 Sagittarii	5.5	1.75	4.9	24 8.5	14 19.1	+ 0 35.8	+0.7417	0.6104	0.0286	+66	+ 3
53 Sagittarii	6.3	1.70	5.4	23 38.2	19 41.9	+ 5 45.1	+0.4328	0.6096	0.0437	+44	-15
Bradley 2488	6.1	1.70	5.4	23 38.3	19 48.5	+ 5 51.5	+0.4403	0.6096	0.0440	+44	-14
B. A. C. 6814	6.3	+1.66	+5.8	-24 10.1	16 1 8.5	+10 58.1	+1.2415	0.6083	+0.0588	+66	+50

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.											
JUNE.											
THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
B. A. C. 6864	6.1	+1.63	+6.1	-22 59.3	18 3 50.0	-10 27.2	+0.2364	0.6075	+0.0661	+33	-26
B. A. C. 6878	6.5	1.62	6.2	22 51.1	4 43.4	-9 35.9	+0.1604	0.6072	0.0685	+30	-30
4 Capricorni	5.7	1.56	6.5	22 5.6	10 9.2	-4 23.5	-0.1833	0.6051	0.0830	+12	-50
Piazz i xx, 146	6.2	1.52	7.0	22 41.7	14 32.4	-0 11.2	+0.8049	0.6031	0.0943	+67	+7
17 Capricorni	5.8	1.45	7.3	21 50.8	20 58.0	+5 58.7	+0.6192	0.5998	0.1103	+62	-4
20 Capricorni	6.2	+1.37	+7.1	-19 23.4	17 2 13.6	+11 1.8	-1.2126	0.5968	+0.1228	-51	-90
7 Capricorni	4.8	1.35	7.4	20 13.0	4 6.1	-11 10.2	-0.1548	0.5956	0.1271	-18	-48
27 Capricorni	6.1	1.34	7.7	20 55.4	6 6.8	-9 14.3	+0.8097	0.5943	0.1317	+69	+7
φ Capricorni	5.3	1.31	7.9	21 1.9	8 31.3	-6 55.5	+1.2411	0.5928	0.1370	+69	+45
30 Capricorni	5.4	1.28	7.3	18 22.1	9 28.3	-6 0.7	-1.2821	0.5922	0.1391	-59	-90
B. A. C. 7463	6.5	+1.23	+7.8	-19 32.8	14 16.0	-1 24.4	+0.5840	0.5889	+0.1492	+63	-7
7 Capricorni	3.7	1.17	7.3	17 4.6	18 21.4	+2 31.6	-1.2562	0.5861	0.1573	-52	-90
κ Capricorni	4.8	1.17	8.0	19 17.0	19 22.8	+3 30.7	+1.1107	0.5854	0.1593	+71	+29
B.D. -17°, 6389	6.5	1.11	7.6	17 16.3	22 29.1	+6 29.8	-0.3951	0.5832	0.1651	+10	-64
29 Aquarii	6.5	1.05	7.8	17 24.4	18 3 31.1	+11 20.4	+0.5924	0.5796	0.1741	+66	-7
50 Aquarii	5.9	+0.93	+7.0	-13 59.6	12 45.6	-3 45.7	-1.1493	0.5730	+0.1888	-36	-90
Bradley 2961	6.2	0.89	6.9	13 23.1	15 7.6	-1 28.9	-1.3109	0.5712	0.1922	-55	-90
56 Aquarii	6.1	0.90	7.4	15 3.2	15 14.0	-1 22.8	+0.3863	0.5712	0.1924	+55	-18
71 Aquarii	5.6	0.80	7.3	14 32.4	22 43.7	+5 50.7	+1.3508	0.5659	0.2022	+76	+64
72 Aquarii	4.4	0.79	7.3	14 4.6	23 32.9	+6 38.2	+1.0510	0.5654	0.2031	+76	+22
74 Aquarii	5.8	+0.77	+6.6	-12 6.2	19 1 14.9	+8 16.6	-0.5879	0.5643	+0.2053	+4	-79
B.D. -11°, 6032	6.3	0.65	6.4	11 11.2	10 35.8	-6 42.3	+0.4526	0.5582	0.2151	+63	-15
ψ ¹ Aquarii	4.5	0.65	5.9	9 35.2	11 7.7	-6 11.5	-1.0497	0.5580	0.2156	-24	-90
ψ ² Aquarii	4.6	0.63	5.9	9 41.0	12 2.6	-5 18.4	-0.7560	0.5574	0.2164	-4	-90
ψ ³ Aquarii	5.2	0.63	6.1	10 6.7	12 30.8	-4 51.2	-0.2201	0.5571	0.2168	+25	-52
B.D. -10°, 6120	6.3	+0.57	+6.0	-9 46.2	17 2.1	-0 29.3	+0.4233	0.5545	+0.2206	+62	-17
B. A. C. 8214	6.5	0.53	5.4	7 58.3	19 59.3	+2 21.9	-0.7450	0.5529	0.2229	-3	-90
Mayer 1012	6.3	0.46	4.9	6 53.4	20 1 55.8	+8 6.3	-0.5103	0.5496	0.2266	+11	-72
30 Piscium	4.7	0.39	4.8	6 31.4	8 7.3	-9 54.6	+0.5308	0.5467	0.2298	+71	-11
33 Piscium	4.7	0.37	4.7	6 13.3	9 41.5	-8 23.5	+0.5835	0.5460	0.2305	+76	-8
Piazz i o, 1	6.0	+0.34	+4.5	-5 45.5	12 0.5	-6 9.1	+0.6472	0.5450	+0.2314	+82	-5
B. A. C. 81	6.3	0.27	3.4	2 43.6	18 39.5	+0 16.8	-0.9065	0.5424	0.2333	-11	-90
20 Ceti	4.9	0.12	2.9	-1 38.6	21 8 11.5	-10 37.5	+1.1503	0.5384	0.2345	+88	+28
26 Ceti	6.0	0.07	2.0	+0 52.5	13 21.3	-5 37.6	-0.2329	0.5374	0.2340	+27	-53
33 Ceti	6.1	+0.03	1.6	1 57.4	16 35.6	-2 29.3	-0.5948	0.5368	0.2334	+8	-78
∫ Piscium	5.1	0.00	+1.2	+3 7.8	20 4.5	+0 52.7	-0.9988	0.5363	+0.2326	-16	-87
Lalande 2632	6.5	-0.05	1.1	3 3.5	22 0 27.5	+5 7.4	+0.0912	0.5358	0.2315	+44	-34
ν Piscium	4.6	0.12	+0.4	5 1.3	7 28.2	+11 54.7	-0.3366	0.5354	0.2283	+22	-58
Piazz i, 249	6.5	0.22	-0.4	7 17.7	18 46.4	-1 8.6	-0.1605	0.5356	0.2217	+31	-47
64 Ceti	5.8	0.26	0.7	8 8.4	21 55.0	+1 54.0	-0.3509	0.5358	0.2195	+21	-58
ξ ¹ Ceti	4.5	-0.26	-0.7	+8 24.9	22 42.2	+2 39.7	-0.4671	0.5359	+0.2189	+14	-66
ξ Arietis	5.5	0.31	1.3	10 11.6	23 4 23.1	+8 9.7	-1.1013	0.5365	0.2144	-25	-80
25 Arietis	6.5	0.33	1.2	9 47.4	5 38.7	+9 22.9	-0.4086	0.5366	0.2133	+18	-61
B. F. 310	6.3	0.33	1.0	9 9.3	6 41.8	+10 24.0	+0.4817	0.5368	0.2124	+70	-12
85 Ceti	6.3	0.39	1.3	10 21.0	12 53.0	-7 36.6	+0.5378	0.5378	0.2066	+73	-8
38 Arietis	5.2	-0.39	-1.8	+12 3.5	14 2.7	-6 29.1	-1.0365	0.5380	+0.2055	-20	-78
W. B. ii, 1033	5.8	0.48	1.9	12 50.0	24 0 17.2	+3 25.7	+0.1932	0.5401	0.1943	+50	24
Mayer 121	6.4	0.60	2.3	15 7.7	15 7.0	-6 13.3	+0.5041	0.5438	0.1751	+72	6
Piazz iiii, 103	6.3	0.60	2.6	16 14.2	15 52.0	-5 29.8	-0.5446	0.5440	0.1740	+10	-65
Mayer 136	5.9	0.65	2.6	17 3.2	22 17.1	+0 42.7	-0.3271	0.5458	0.1646	+22	-49
B. A. C. 1239	6.3	-0.68	-2.6	+17 2.2	25 1 46.0	+4 4.7	+0.2540	0.5467	+0.1593	+54	-17
Piazz iiii, 215	5.8	0.67	2.7	17 56.0	1 50.3	+4 8.8	-0.6932	0.5467	0.1591	+1	-72
Piazz iiii, 249	6.1	0.70	2.5	17 5.6	5 11.7	+7 23.6	+0.7302	0.5477	0.1538	+90	+9
B.D. +16°, 569	6.2	0.71	2.4	17 2.4	7 17.6	+9 25.3	+1.1070	0.5482	0.1504	+90	+35
B.D. +18°, 624	6.0	0.73	2.6	18 31.3	10 55.1	-11 4.5	+0.0555	0.5492	0.1443	+43	26
B. A. C. 1361	6.0	-0.74	-2.6	+18 49.8	13 0.3	-9 3.5	+0.0228	0.5498	-0.1408	+41	27

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
δ^3 Tauri	4.3	-0.74	-2.4	+17 43.0	25 13 16.3	- 8 48.0	+1.2536	0.5499	+0.1403	+90	+52
ϵ Tauri	3.6	0.75	2.6	18 58.6	14 41.4	- 7 25.7	+0.1009	0.5503	0.1378	+45	-23
B. A. C. 1417	6.4	0.78	2.6	19 41.5	17 56.6	- 4 17.1	-0.2283	0.5511	0.1321	+27	-40
B.D. +20°, 785	5.8	0.79	-2.7	20 30.0	19 6.1	- 3 9.9	-0.9448	0.5514	+0.1300	-16	-70
NEW MOON.											
η Cancri	5.4	-0.72	+1.6	+20 45.3	30 5 54.8	+ 4 1.8	+1.1197	0.5431	-0.0878	+90	+43
39 Cancri	6.5	0.69	1.8	20 20.0	9 26.1	+ 7 26.2	+1.2655	0.5416	0.0942	+90	+60
γ Cancri	4.9	-0.70	+2.0	+21 48.0	10 56.0	+ 8 53.2	-0.5016	0.5410	-0.0969	+11	-54

JULY.

B.D. +16°, 2077	6.3	-0.36	+2.3	+16 12.4	2 3 40.2	+ 0 21.4	+0.4119	0.5227	-0.1593	+65	-10
η Leonis	3.6	0.36	2.6	17 12.7	4 29.8	+ 1 9.5	-0.8372	0.5223	0.1604	- 8	-73
42 Leonis	6.1	-0.29	+2.3	+15 26.4	11 57.9	+ 8 24.3	-0.1023	0.5193	-0.1694	+34	-38
ι Leonis	5.8	-0.24	2.2	14 36.6	17 20.5	-10 22.7	-0.1087	0.5172	0.1754	+33	-39
ϵ Leonis	4.1	+0.03	1.6	11 2.2	3 20 41.4	- 7 49.0	-1.3102	0.5092	0.2005	-47	-79
ω Virginis	5.4	0.11	1.0	8 38.6	4 4 30.5	- 0 13.3	-0.2560	0.5078	0.2059	+26	-52
ξ Virginis	4.8	0.14	1.2	8 46.2	8 10.7	+ 3 20.7	-1.1542	0.5073	0.2081	-29	-81
ν Virginis	4.2	+0.15	+0.5	+ 7 2.7	8 29.7	+ 3 39.2	+0.6802	0.5073	-0.2083	+88	- 1
π Virginis	4.6	0.23	0.7	7 7.7	16 35.6	+11 31.3	+1.1154	0.5066	0.2127	-25	-83
B.D. +6°, 2543	6.5	0.24	0.4	6 4.3	18 9.0	-10 57.8	-0.2873	0.5066	0.2135	+24	-55
11 Virginis	5.6	0.27	+0.5	6 19.1	21 33.7	- 7 39.0	-1.2881	0.5065	0.2150	-42	-84
ϵ Virginis	5.1	0.33	-0.3	3 49.5	5 3 7.3	- 2 14.7	+0.2450	0.5066	0.2173	+53	-26
Piazzi xii, 142	5.9	+0.44	-0.6	+ 2 21.7	12 48.9	+ 7 10.5	-0.2755	0.5075	-0.2201	+25	-55
80 Virginis	5.6	0.78	2.6	- 4 55.7	6 19 2.7	-11 27.8	+0.9142	0.5159	0.2212	+85	+11
Piazzi xiii, 174	6.4	0.82	2.4	5 2.2	23 23.2	- 7 15.0	+0.0707	0.5179	0.2203	+43	-36
π Virginis	6.5	0.85	2.9	6 22.8	7 1 38.2	- 5 4.0	+1.0148	0.5189	0.2197	+84	+18
B.D. -12°, 4134	6.4	1.21	3.8	12 27.2	8 7 11.6	- 0 25.1	+1.1501	0.5373	0.2037	+78	+29
ξ^1 Libræ	5.7	+1.24	-3.4	-11 31.5	10 17.6	+ 2 34.9	-0.4551	0.5397	-0.2011	+11	-68
ξ^2 Libræ	5.7	1.25	3.2	11 2.4	11 25.7	+ 3 40.8	-1.1906	0.5406	0.2000	-37	-90
α^1 Libræ	6.2	1.41	3.8	15 13.1	22 40.3	- 9 26.9	+0.9895	0.5499	0.1885	+75	+17
ζ^3 Libræ	6.0	1.47	3.8	16 17.7	9 3 2.9	- 5 13.2	+1.2921	0.5536	0.1832	+74	+48
γ Libræ	4.1	1.48	3.1	14 29.0	5 15.5	- 3 5.1	-0.9884	0.5555	0.1804	-23	-90
η Libræ	5.5	+1.52	-3.2	-15 22.9	9 3.9	+ 0 35.4	-0.7349	0.5589	-0.1753	- 8	-90
θ Libræ	4.4	1.58	3.0	16 27.6	13 20.5	+ 4 43.0	-0.3556	0.5628	0.1691	+12	-61
49 Libræ	5.4	1.59	3.0	16 15.8	16 12.7	+ 7 29.1	-1.0365	0.5654	0.1648	-29	-90
B.D. -17°, 4502	6.4	1.67	3.0	18 5.8	20 17.6	+11 25.2	+0.1891	0.5691	0.1582	+40	-29
10 Scorpii	3.9	1.69	3.2	19 13.4	21 9.7	-11 44.6	+1.2071	0.5699	0.1567	+71	+39
B. A. C. 5408	6.4	+1.69	-2.9	-18 18.0	22 18.7	-10 38.1	+0.0819	0.5710	-0.1547	+34	-35
ψ Ophiuchi	4.6	1.75	2.9	19 49.4	10 2 17.0	- 6 48.4	+1.0378	0.5746	0.1477	+70	+23
χ Ophiuchi	4.9	1.75	2.4	18 14.9	3 31.9	- 5 36.3	-0.7540	0.5757	0.1454	-12	-90
B. A. C. 5567	6.5	1.82	2.3	20 13.8	9 7.6	- 0 13.2	+0.4818	0.5808	0.1347	+55	-12
Bradley 2115	5.5	1.82	2.1	19 44.9	9 40.6	+ 0 18.6	-0.0814	0.5813	0.1336	+23	-44
Mayer 679	5.9	+1.87	-1.8	-20 15.8	14 22.6	+ 4 49.9	-0.1652	0.5854	-0.1240	+17	-49
B. A. C. 5700	6.1	1.88	1.4	19 23.7	15 51.8	+ 6 15.6	-1.2258	0.5867	0.1208	-52	-90
B. A. C. 5746	6.2	1.92	1.3	20 22.0	18 56.4	+ 9 13.1	-0.6028	0.5893	0.1141	- 7	-83
Bradley 2162	6.3	1.94	1.5	21 26.3	19 30.0	+ 9 45.4	+0.4175	0.5898	0.1128	+49	-16
ξ Ophiuchi	4.4	1.99	0.8	21 0.9	11 1 22.0	- 8 36.5	-0.6322	0.5945	0.0994	-10	-87
B. A. C. 5866	5.9	+2.00	-0.6	-21 21.4	2 49.5	- 7 12.4	-0.4298	0.5957	-0.0959	0	-67
52 Ophiuchi	6.4	2.04	-0.2	21 58.9	6 57.1	- 3 14.8	-0.1750	0.5987	0.0858	+12	-50
58 Ophiuchi	4.8	2.05	+0.2	21 38.3	10 6.2	- 0 13.3	-0.7764	0.6010	0.0778	-21	-90
4 Sagittarii	4.8	2.13	0.7	23 48.5	16 19.8	+ 5 45.1	+0.9598	0.6050	0.0616	+65	+19
B. A. C. 6088	5.7	2.11	1.0	22 46.7	17 9.0	+ 6 32.2	-0.1189	0.6055	0.0594	+14	-46
Bradley 2276	5.2	+2.15	+1.4	-23 43.2	20 51.0	+10 5.1	+0.6192	0.6076	-0.0494	+58	- 4

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.											
JULY.											
THE STAR'S					AT CONJUNCTION IN R. A.						Limiting Parallels.
Name.	Mag.	*Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	"	°	d h m	h m				°	°
24 Sagittarii	5.7	+2.19	+ 2.5	-24 6.0	12 5 9.6	- 5 57.1	+0.6808	0.6115	-0.0263	+62	0
Bradley 2335	5.8	2.19	2.8	23 35.0	6 53.3	- 4 17.8	+0.1253	0.6121	0.0214	+23	-32
26 Sagittarii	6.1	2.20	2.9	23 55.1	8 7.7	- 3 6.5	+0.4340	0.6126	0.0178	+42	-15
28 Sagittarii	5.6	2.18	3.2	22 29.3	9 48.9	- 1 29.5	-1.0109	0.6131	0.0130	-42	-90
30 Sagittarii	6.2	2.18	3.4	22 16.0	11 29.3	+ 0 6.7	-1.2470	0.6136	0.0081	-64	-90
1 st Sagittarii	5.0	+2.19	+ 3.6	-22 51.5	12 42.6	+ 1 16.8	-0.6691	0.6139	-0.0046	-21	-90
1 st Sagittarii	5.1	2.19	3.7	22 47.1	13 3.5	+ 1 36.8	-0.7417	0.6140	0.0036	-25	-90
Piazzi xviii, 225	5.9	2.20	3.7	23 17.4	13 23.1	+ 1 55.6	-0.2427	0.6141	-0.0027	+ 2	-54
B. A. C. 6485	6.3	2.19	4.0	22 49.5	15 28.2	+ 3 55.4	-0.7031	0.6146	+0.0034	-23	-90
Mayer 787	6.1	2.23	4.2	24 48.0	17 52.8	+ 6 13.8	+1.2678	0.6150	0.0104	+65	+60
Lalande 35745	6.5	+2.20	+ 4.3	-23 20.1	18 5.2	+ 6 25.8	-0.1792	0.6150	+0.0110	+ 6	-50
URANUS	...	...	...	23 3.8	18 21.5	+ 6 41.3	-0.4438	0.6168	0.0120	- 8	-69
B. A. C. 6576	6.1	2.23	4.6	24 20.1	20 34.8	+ 8 49.0	+0.8460	0.6153	0.0183	+66	+11
Piazzi xix, 61	5.5	2.20	5.0	22 34.4	22 29.0	+10 38.3	-0.8546	0.6155	0.0238	-30	-90
χ^3 Sagittarii	5.5	2.22	5.2	24 8.5	18 0 15.0	-11 40.3	+0.7407	0.6156	0.0290	+66	+ 3
53 Sagittarii	6.3	+2.21	+ 5.8	-23 38.2	5 32.2	- 6 36.5	+0.4348	0.6155	+0.0443	+44	-15
Bradley 2488	6.1	2.21	5.9	23 38.3	5 38.7	- 6 30.3	+0.4422	0.6155	0.0446	+44	-14
B. A. C. 6814	6.3	2.20	6.4	24 10.1	10 52.4	- 1 29.9	+1.2360	0.6149	0.0596	+66	+48
B. A. C. 6864	6.1	2.18	6.8	22 59.3	13 30.6	+ 1 1.5	+0.2412	0.6144	0.0671	+34	-26
B. A. C. 6878	6.5	2.18	7.0	22 51.1	14 22.8	+ 1 51.6	+0.1660	0.6142	0.0695	+30	-30
4 Capricorni	5.7	+2.15	+ 7.6	-22 5.5	19 41.2	+ 6 56.4	-0.1729	0.6127	+0.0842	+14	-50
Piazzi xx, 146	6.2	2.13	8.2	22 41.7	23 58.2	+11 2.6	+0.8047	0.6111	0.0958	+67	+ 7
17 Capricorni	5.8	2.09	8.9	21 50.8	14 6 13.9	- 6 57.4	+0.6221	0.6084	0.1122	+62	- 4
20 Capricorni	6.2	2.03	9.2	19 23.4	11 21.0	- 2 2.9	-1.1848	0.6057	0.1249	-47	-90
η Capricorni	4.8	2.02	9.4	20 13.0	13 10.4	- 0 18.0	-0.1404	0.6047	0.1294	+18	-48
27 Capricorni	6.1	+2.02	+ 9.7	-20 55.4	15 7.6	+ 1 34.4	+0.8116	0.6036	+0.1340	+69	+ 7
ϕ Capricorni	5.3	2.00	10.0	21 1.9	17 28.0	+ 3 49.1	+1.2374	0.6022	0.1394	+69	+44
30 Capricorni	5.4	1.97	9.7	18 22.1	18 23.4	+ 4 42.2	-1.2509	0.6016	0.1416	-53	-90
B. A. C. 7463	6.5	1.94	10.3	19 32.8	23 2.5	+ 9 10.0	+0.5905	0.5986	0.1518	+64	- 6
γ Capricorni	3.7	1.89	10.2	17 4.5	15 3 0.5	-11 1.4	-1.2223	0.5960	0.1602	-47	-90
κ Capricorni	4.8	+1.90	+10.7	-19 17.0	4 0.0	-10 4.3	+1.1107	0.5953	+0.1622	+71	+29
B.D.-17°, 6389	6.5	1.85	10.6	17 16.3	7 0.5	- 7 10.8	-0.3724	0.5931	0.1682	+11	-62
29 Aquarii	6.5	1.81	11.0	17 24.3	11 53.0	- 2 29.8	+0.6018	0.5896	0.1773	+67	- 6
50 Aquarii	5.9	1.70	10.8	13 59.6	20 49.9	+ 6 6.3	-1.1110	0.5830	0.1924	-32	-90
Bradley 2961	6.2	1.68	10.8	13 23.0	23 7.4	+ 8 18.7	-1.2666	0.5813	0.1958	-48	-90
56 Aquarii	6.1	+1.69	+11.2	-15 3.2	23 13.6	+ 8 24.6	+0.4019	0.5812	+0.1960	+56	-17
τ^2 Aquarii	4.4	1.60	11.3	14 4.5	16 7 16.5	- 7 50.5	+1.0590	0.5752	0.2070	+76	+22
74 Aquarii	5.8	1.57	10.9	12 6.2	8 55.3	- 6 15.4	-0.5547	0.5740	0.2091	+ 5	-76
B.D.-11°, 6032	6.3	1.47	11.0	11 11.1	17 58.6	+ 2 28.2	+0.4729	0.5676	0.2189	+64	-14
ψ^1 Aquarii	4.5	1.47	10.6	9 35.2	18 29.6	+ 2 58.0	-1.0073	0.5672	0.2194	-20	-90
ψ^2 Aquarii	4.6	+1.45	+10.6	- 9 40.9	19 22.7	+ 3 49.3	-0.7174	0.5667	+0.2203	- 2	-90
ψ^3 Aquarii	5.2	1.44	10.8	10 6.7	19 50.1	+ 4 15.7	-0.1895	0.5663	0.2207	+26	-50
B.D.-10°, 6120	6.3	1.40	10.8	9 46.2	17 0 13.1	+ 8 29.3	+0.4458	0.5634	0.2244	+64	-16
B. A. C. 8214	6.5	1.36	10.3	7 58.3	3 5.1	+11 15.3	-0.7049	0.5616	0.2265	0	-90
Mayer 1012	6.3	1.30	10.0	6 53.3	8 51.2	- 7 10.6	-0.4722	0.5580	0.2303	+13	-69
30 Piscium	4.7	+1.23	+10.0	- 6 31.4	14 52.3	- 1 22.1	+0.5562	0.5546	+0.2333	+73	-10
33 Piscium	4.7	1.21	10.0	6 13.2	16 24.0	+ 0 6.6	+0.6088	0.5537	0.2330	+78	- 7
Piazzi o, 1	6.0	1.19	9.8	5 45.4	18 39.3	+ 2 17.3	+0.6723	0.5525	0.2348	+83	- 3
B. A. C. 81	6.3	1.11	8.8	2 43.5	18 1 8.1	+ 8 32.9	-0.8602	0.5493	0.2365	- 7	-90
20 Ceti	4.9	0.97	8.3	- 1 38.5	14 21.6	- 2 39.9	+1.1757	0.5440	0.2370	+88	+30
26 Ceti	6.0	+0.92	+ 7.4	+ 0 52.6	19 25.1	+ 2 13.6	-0.1929	0.5423	+0.2363	+29	-50
33 Ceti	6.1	0.88	7.0	1 57.5	22 35.8	+ 5 18.1	-0.5500	0.5414	0.2355	+10	-74
γ Piscium	5.1	0.84	6.6	3 7.9	19 2 1.0	+ 8 36.6	-0.9501	0.5406	0.2345	-13	-82
Lalande 2632	6.5	0.80	6.6	3 3.6	6 19.7	-11 13.0	+0.1305	0.5396	0.2329	+47	-37
ν Piscium	4.6	0.73	5.8	5 1.4	13 14.4	- 4 31.7	-0.2932	0.5385	0.2296	+24	-56
Piazzi i, 249	6.5	+0.62	+ 4.7	+ 7 17.8	20 0 24.8	+ 6 17.2	-0.1182	0.5375	+0.2226	+33	-45

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
64 Ceti	5.8	+0.58	+4.3	+ 8 8.4	20 3 31.6	+ 9 18.0	-0.3075	0.5374	+0.2201	+23	-55
ξ^1 Ceti	4.5	0.58	4.2	8 25.0	4 18.5	+10 3.4	-0.4230	0.5374	0.2195	+17	-63
ξ Arietis	5.5	0.52	3.5	10 11.7	9 56.8	- 8 29.2	-1.0547	0.5373	0.2147	-21	-80
25 Arietis	6.5	0.50	3.5	9 47.5	11 11.9	- 7 16.5	-0.3653	0.5374	0.2136	+20	-58
B.F. 310	6.3	0.50	3.8	9 9.4	12 14.6	- 6 15.8	+0.5210	0.5374	0.2126	+73	-10
85 Ceti	6.3	+0.43	+3.3	+10 21.1	18 24.0	- 0 18.2	+0.5628	0.5378	+0.2065	+76	- 6
38 Arietis	5.2	0.43	2.6	12 3.6	19 33.5	+ 0 49.0	-0.9918	0.5379	0.2053	-17	-78
W. B. ii, 1033	5.8	0.32	2.2	12 50.0	21 5 46.7	+10 42.6	+0.2328	0.5392	0.1938	+53	-22
Mayer 121	6.4	0.18	1.3	15 7.8	20 37.7	+ 1 4.7	+0.5416	0.5418	0.1743	+75	- 4
Piazzi iii, 103	6.3	0.18	0.9	16 14.3	21 22.8	+ 1 48.3	-0.5068	0.5419	0.1732	+12	-62
Mayer 136	5.9	+0.12	+0.6	+17 3.2	22 3 49.4	+ 8 2.3	-0.2910	0.5433	+0.1637	+23	-47
B. A. C. 1239	6.3	0.08	0.5	17 2.2	7 19.3	+11 25.3	+0.2895	0.5441	0.1582	+57	-15
Piazzi iii, 215	5.8	0.08	0.3	17 56.1	7 23.6	+11 29.5	-0.6581	0.5441	0.1581	+ 3	-70
Piazzi iii, 249	6.1	0.05	0.4	17 5.7	10 46.1	- 9 14.6	+0.7652	0.5449	0.1528	+90	+11
B.D. +16°, 569	6.2	+0.03	0.5	17 2.5	12 52.8	- 7 12.1	+1.1419	0.5453	0.1493	+90	+39
B.D. +18°, 624	6.0	0.00	+0.1	+18 31.4	16 31.7	- 3 40.5	+0.0884	0.5462	+0.1432	+44	-24
B. A. C. 1361	6.0	-0.02	-0.1	18 49.8	18 37.8	- 1 38.5	+0.0552	0.5467	0.1397	+42	-25
δ^3 Tauri	4.3	0.02	+0.3	17 43.1	18 53.8	- 1 23.1	+1.2876	0.5467	0.1392	+90	+58
ϵ Tauri	3.6	0.03	-0.1	18 58.6	20 19.6	- 0 0.1	+0.1328	0.5471	0.1368	+47	-21
B. A. C. 1417	6.4	0.06	0.3	19 41.5	23 36.2	+ 3 10.0	-0.1979	0.5478	0.1310	+28	-38
B.D. +20°, 785	5.8	-0.07	-0.5	+20 30.0	23 0 46.2	+ 4 17.6	-0.9161	0.5481	+0.1289	-14	-69
B.D. +19°, 811	6.2	0.14	0.2	19 20.2	8 29.1	+11 45.0	+1.2798	0.5497	0.1148	+90	+60
ι Tauri	4.7	0.17	0.5	21 27.5	12 10.4	- 8 41.1	-0.6025	0.5506	0.1077	+ 6	-62
B.D. +21°, 755	6.3	0.18	0.7	21 8.9	12 45.7	- 8 7.0	-0.2043	0.5507	0.1068	+28	-36
λ Tauri	5.2	0.19	0.5	20 17.8	14 21.5	- 6 34.4	+0.8857	0.5510	0.1037	+90	+24
105 Tauri	6.0	-0.19	-0.8	+21 35.0	14 23.2	- 6 32.7	-0.5036	0.5510	+0.1036	+12	-54
108 Tauri	6.2	0.22	0.9	22 10.8	17 49.4	- 3 13.5	-0.8058	0.5516	0.0970	- 7	-68
η Tauri	5.1	0.23	0.9	22 0.1	19 34.1	- 1 32.3	-0.4467	0.5519	0.0936	+14	-49
θ Tauri	4.8	0.26	0.7	21 51.5	23 23.0	+ 2 8.8	+0.0507	0.5525	0.0860	+42	-20
ζ Tauri	3.0	0.29	0.5	21 5.2	24 3 57.2	+ 6 33.8	+1.2628	0.5532	0.0768	+90	+61
Piazzi v, 184	6.5	-0.30	-0.8	+22 36.9	5 56.1	+ 8 28.7	-0.2514	0.5535	+0.0727	+25	-36
Piazzi v, 192	6.0	0.31	1.0	23 9.7	6 29.8	+ 9 1.3	-0.8054	0.5535	0.0716	- 7	-67
141 Tauri	6.3	0.36	0.6	22 23.9	14 51.0	- 6 54.6	+0.5508	0.5543	0.0543	+78	+ 9
ι Geminorum	4.1	0.37	0.8	23 16.1	15 56.0	- 5 51.8	-0.3411	0.5544	0.0520	+20	-39
B. A. C. 1970	6.0	0.38	0.6	22 12.3	18 24.7	- 3 28.2	+0.9434	0.5545	0.0468	+90	+34
3 Geminorum	5.6	-0.38	-0.7	+23 7.7	18 28.8	- 3 24.2	-0.0629	0.5546	+0.0466	+36	-22
6 Geminorum	6.3	0.39	0.6	22 55.8	19 39.4	- 2 16.0	+0.2083	0.5546	0.0442	+52	- 8
η Geminorum	3.5	0.40	0.6	22 32.0	20 49.6	- 1 8.2	+0.6915	0.5546	0.0417	+90	+19
8 Geminorum	6.1	0.40	0.8	24 0.0	21 26.9	- 0 32.2	-0.8866	0.5547	0.0404	-13	-66
9 Geminorum	6.2	0.40	0.8	23 46.3	21 45.1	- 0 14.6	-0.6255	0.5547	0.0398	+ 4	-58
μ Geminorum	3.2	-0.41	-0.5	+22 33.7	25 0 29.1	+ 2 23.8	+0.8007	0.5547	+0.0340	+90	+26
B. A. C. 2064	6.0	0.42	0.6	23 22.7	1 38.7	+ 3 31.0	-0.0560	0.5547	0.0315	+36	-21
B. A. C. 2238	5.8	0.48	-0.4	23 42.7	13 39.0	- 8 53.2	-0.1962	0.5542	+0.0059	+28	-26
NEW MOON.											
42 Leonis	6.1	-0.36	+2.4	+15 26.4	29 18 26.5	- 7 19.6	-0.1712	0.5202	-0.1705	+30	-42
ι Leonis	5.8	0.33	2.4	14 36.6	23 49.3	- 2 6.3	-0.1817	0.5181	0.1765	+29	-43
ω Virginis	5.4	0.10	1.9	8 38.6	31 11 4.5	+ 8 8.3	-0.3560	0.5076	0.2064	+20	-58
ζ Virginis	4.8	0.07	2.0	8 46.2	14 45.8	+11 43.4	-1.2607	0.5069	0.2086	-39	-81
ν Virginis	4.2	0.07	1.6	7 2.7	15 4.9	-11 58.0	+0.5816	0.5069	0.2088	+78	- 7
π Virginis	4.6	-0.01	+1.7	+ 7 7.7	23 13.9	- 4 2.8	-1.2278	0.5057	-0.2130	-36	-83

AUGUST.

B. D. +6°, 2543	6.5	-0.01	+1.5	+ 6 4.4	1 0 48.0	- 2 31.3	-0.3968	0.5056	-0.2137	+18	-62
ϵ Virginis	5.1	+0.07	+1.0	+ 3 49.5	9 50.7	+ 6 16.2	+0.1335	0.5050	-0.2171	+47	-32

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

THE STAR'S					AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Magn.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.	
		$\Delta\alpha$	$\Delta\delta$		d h m	h m						
Piazzii xii, 142	5.9	+0.17	+0.7	+ 2 21.7	1 19 38.3	- 8 12.4	-0.3954	0.5052	-0.2197	+19	-63	
80 Virginis	5.6	0.47	-1.0	- 4 55.7	3 2 19.7	- 2 23.1	+0.7951	0.5112	0.2195	+85	+ 4	
Piazzii xiii, 174	6.4	0.51	1.0	5 2.2	6 45.2	+ 1 54.7	-0.0573	0.5128	0.2184	+36	-44	
77 Virginis	6.5	0.54	1.4	6 22.7	9 2.9	+ 4 8.4	+0.8963	0.5137	0.2177	+84	+10	
B.D.-12°, 4134	6.4	0.90	2.7	12 27.2	4 15 18.0	+ 9 29.0	+1.0374	0.5299	0.2008	+78	+20	
♄ Libræ	5.7	+0.93	-2.2	-11 31.4	18 29.0	-11 26.0	-0.5870	0.5322	-0.1981	+ 4	-79	
♄ Libræ	5.7	0.94	2.0	11 2.4	19 38.9	-10 18.3	-1.3313	0.5329	0.1971	-55	-90	
♄ Libræ	6.2	1.11	2.9	15 13.1	5 7 12.0	+ 0 52.7	+0.8805	0.5416	0.1854	+75	+10	
♄ Libræ	6.0	1.17	3.1	16 17.7	11 41.9	+ 5 13.7	+1.1892	0.5452	0.1802	+74	+35	
♄ Libræ	5.6	1.19	3.2	16 32.5	12 44.3	+ 6 14.1	+1.2614	0.5460	0.1789	+73	+44	
γ Libræ	4.1	+1.19	-2.4	-14 29.0	13 58.2	+ 7 25.5	-1.1199	0.5470	-0.1774	-33	-90	
η Libræ	5.5	1.24	2.5	15 22.9	17 53.0	+11 12.4	-0.8611	0.5503	0.1723	-15	-90	
θ Libræ	4.4	1.31	2.5	16 27.6	22 16.9	- 8 32.6	-0.4743	0.5540	0.1661	+ 6	-70	
49 Libræ	5.4	1.32	2.5	16 15.8	6 1 14.0	- 5 41.7	-1.1622	0.5566	0.1617	-39	-90	
B.D.-17°, 4502	6.4	1.41	2.6	18 5.8	5 25.8	- 1 38.6	-0.0818	0.5603	0.1552	+34	-35	
♏ Scorpii	3.9	+1.44	-3.0	-19 13.4	6 19.3	- 0 47.1	+1.1132	0.5610	-0.1538	+71	+29	
B. A. C. 5408	6.4	1.44	2.6	18 18.0	7 30.3	+ 0 21.4	-0.0254	0.5621	0.1518	+28	-41	
ψ Ophiuchi	4.6	1.51	2.8	19 49.4	11 35.2	+ 4 17.7	+0.9451	0.5657	0.1449	+70	+16	
χ Ophiuchi	4.9	1.52	2.1	18 14.9	12 52.2	+ 5 31.9	-0.8680	0.5669	0.1427	-19	-90	
B. A. C. 5567	6.5	1.61	2.3	20 13.8	18 37.0	+11 4.2	+0.3873	0.5720	0.1321	+49	-18	
Bradley 2115	5.5	+1.61	-2.1	-19 44.9	19 10.9	+11 36.9	-0.1822	0.5725	-0.1310	+17	-50	
Mayer 679	5.9	1.68	1.9	20 15.8	7 0 0.4	- 7 44.3	-0.2631	0.5768	0.1215	+12	-55	
B. A. C. 5746	6.2	1.74	1.4	20 22.0	4 41.2	- 3 14.0	-0.7016	0.5809	0.1117	-13	-90	
Bradley 2162	6.3	1.76	1.7	21 26.3	5 15.7	- 2 40.8	+0.3308	0.5813	0.1105	+43	-21	
ξ Ophiuchi	4.4	1.84	1.1	21 0.9	11 16.4	+ 3 6.1	-0.7249	0.5864	0.0972	-16	-90	
B. A. C. 5866	5.9	+1.85	-0.9	-21 21.4	12 45.9	+ 4 32.1	-0.5190	0.5876	-0.0937	- 4	-75	
52 Ophiuchi	6.4	1.91	0.6	21 58.9	16 59.3	+ 8 35.6	-0.2575	0.5910	0.0838	+ 9	-55	
58 Ophiuchi	4.8	1.94	0.2	21 38.3	20 12.6	+11 41.3	-0.8614	0.5934	0.0760	-26	-90	
4 Sagittarii	4.8	2.06	-0.1	23 48.5	8 2 33.9	- 6 12.6	+0.8970	0.5978	0.0599	+66	+14	
B. A. C. 6088	5.7	2.04	+0.4	22 46.7	3 24.1	- 5 24.4	-0.1901	0.5986	0.0578	+ 9	-51	
Bradley 2276	5.2	+2.10	+0.6	-23 43.2	7 10.4	- 1 47.2	+0.5578	0.6010	-0.0479	+53	- 8	
24 Sagittarii	5.7	2.20	1.7	24 6.1	15 37.5	+ 6 19.1	+0.6282	0.6058	0.0249	+57	- 3	
Bradley 2335	5.8	2.20	2.0	23 35.0	17 22.8	+ 8 0.0	+0.0710	0.6067	0.0200	+20	-35	
26 Sagittarii	6.1	2.22	2.1	23 55.1	18 38.2	+ 9 12.3	+0.3831	0.6073	0.0165	+38	-18	
28 Sagittarii	5.6	2.21	2.7	22 29.3	20 20.8	+10 50.6	-1.0684	0.6080	0.0117	-46	-90	
♐ Sagittarii	5.0	+2.24	+3.0	-22 51.5	23 16.9	-10 20.7	-0.7209	0.6092	-0.0034	-24	-90	
♐ Sagittarii	5.1	2.24	3.1	22 47.2	23 38.0	-10 0.4	-0.7933	0.6094	0.0024	-28	-90	
Piazzii xviii, 225	5.9	2.25	3.0	23 17.4	23 57.9	- 9 41.4	-0.2915	0.6095	-0.0015	- 1	-58	
B. A. C. 6485	6.3	2.26	3.4	22 49.5	9 2 4.4	- 7 40.3	-0.7513	0.6102	+0.0045	-26	-90	
URANUS				23 10.2	3 22.4	- 6 25.5	-0.3985	0.6120	0.0084	- 6	-65	
Mayer 787	6.1	+2.31	+3.4	-24 48.0	4 30.7	- 5 20.2	+1.2312	0.6110	+0.0115	+65	+49	
Lalande 35745	6.5	2.29	3.6	23 20.1	4 43.2	- 5 8.1	-0.2216	0.6111	0.0121	+ 4	-53	
B. A. C. 6576	6.1	2.33	3.8	24 20.1	7 14.2	- 2 43.5	+0.8105	0.6117	0.0194	+66	+ 9	
Piazzii xix, 61	5.5	2.30	4.4	22 34.4	9 9.4	- 0 53.2	-0.8937	0.6122	0.0250	-33	-90	
χ ¹ Sagittarii	4.9	2.36	4.3	24 41.2	10 50.8	+ 0 44.0	+1.2453	0.6125	0.0298	+65	+51	
χ ³ Sagittarii	5.5	+2.35	+4.4	-24 8.5	10 56.4	+ 0 49.3	+0.7088	0.6125	+0.0300	+64	+ 1	
53 Sagittarii	6.3	2.37	5.3	23 38.2	16 15.6	+ 5 55.1	+0.4082	0.6132	0.0454	+42	-16	
Bradley 2488	6.1	2.37	5.3	23 38.3	16 22.1	+ 6 1.3	+0.4158	0.6132	0.0457	+43	-16	
B. A. C. 6814	6.3	2.40	5.8	24 10.1	21 37.2	+11 3.1	+1.2166	0.6134	0.0608	+66	+45	
B. A. C. 6864	6.1	2.40	6.6	22 59.3	10 15.8	-10 25.1	+0.2242	0.6134	0.0683	+33	-27	
B. A. C. 6878	6.5	+2.39	+6.7	-22 51.1	1 8.1	- 9 34.9	+0.1502	0.6132	+0.0707	+29	-31	
4 Capricorni	5.7	2.40	7.5	22 5.6	6 26.6	- 4 29.9	-0.1814	0.6126	0.0856	+12	-50	
Piazzii xx, 146	6.2	2.42	8.0	22 41.7	10 43.1	- 0 24.2	+0.8002	0.6116	0.0973	+67	+ 7	
17 Capricorni	5.8	2.42	8.9	21 50.8	16 57.1	+ 5 34.1	+0.6260	0.6100	0.1138	+63	- 4	
20 Capricorni	6.2	2.38	9.8	19 23.4	22 2.1	+10 26.4	-1.1667	0.6081	0.1268	-45	-90	
η Capricorni	4.8	+2.39	+9.9	-20 13.0	23 50.6	-11 49.6	-0.1241	0.6074	+0.1314	+20	-47	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.		
		$\Delta\alpha$	$\Delta\delta$										
27 Capricorni	6.1	+2.40	+10.1	-20 55.4	11 1 46.8	- 9 58.2	+0.8261	0.6065	+0.1361	+69	+ 8		
o Capricorni	5.3	2.40	10.4	21 1.9	4 5.7	- 7 45.0	+1.2526	0.6055	0.1416	+69	+47		
30 Capricorni	5.4	2.36	10.6	18 22.1	5 0.4	- 6 52.6	-1.2206	0.6050	0.1438	-49	-90		
B. A. C. 7463	6.5	2.37	11.1	19 32.8	9 36.2	- 2 28.1	+0.6167	0.6027	0.1543	+65	- 5		
Capricorni	3.7	2.33	11.5	17 4.5	13 30.9	+ 1 17.1	-1.1775	0.6005	0.1629	-42	-90		
Capricorni	4.8	+2.36	+11.6	-19 17.0	14 29.5	+ 2 13.3	+1.1396	0.6000	+0.1650	+71	+31		
Capricorni	2.9	2.32	11.6	16 32.5	16 12.8	+ 3 52.5	-1.2510	0.5990	0.1686	-50	-90		
B. D.-17°, 6389	6.5	2.32	11.9	17 16.3	17 27.2	+ 5 3.9	-0.3278	0.5983	0.1711	+13	-58		
29 Aquarii	6.5	2.30	12.4	17 24.3	22 14.6	+ 9 39.9	+0.6452	0.5953	0.1805	+70	- 4		
50 Aquarii	5.9	2.23	12.9	13 59.5	12 7 0.8	- 5 54.7	-1.0375	0.5897	0.1960	-26	-90		
Bradley 2961	6.2	+2.22	+13.1	-13 23.0	9 15.2	- 3 45.4	-1.1907	0.5883	+0.1997	-39	-90		
56 Aquarii	6.1	2.23	13.2	15 3.2	9 21.3	- 3 39.6	+0.4630	0.5882	0.1998	+60	-14		
Aquarii	4.4	2.18	13.5	14 4.5	17 12.9	+ 3 53.9	+1.1235	0.5830	0.2112	+76	+28		
74 Aquarii	5.8	2.15	13.6	12 6.1	18 49.2	+ 5 26.6	-0.4686	0.5819	0.2134	+10	-69		
B.D.-11°, 6032	6.3	2.09	13.9	11 11.1	13 38.0	-10 4.4	+0.5587	0.5762	0.2236	+70	-10		
Aquarii	4.5	+2.09	+13.7	- 9 35.1	4 8.2	- 9 35.3	-0.9009	0.5759	+0.2241	-13	-90		
Aquarii	4.6	2.07	13.8	9 40.9	4 59.8	- 8 45.7	-0.6138	0.5753	0.2249	+ 4	-81		
Aquarii	5.2	2.07	13.8	10 6.6	5 26.4	- 8 20.0	-0.0923	0.5750	0.2254	+32	-44		
B.D.-10°, 6120	6.3	2.04	14.0	9 46.1	9 41.9	- 4 13.9	+0.5402	0.5723	0.2292	+70	-11		
B. A. C. 8214	6.5	2.01	13.8	7 58.2	12 28.9	- 1 32.9	-0.5906	0.5706	0.2315	+ 6	-79		
Mayer 1012	6.3	+1.97	+13.7	- 6 53.3	18 4.5	+ 3 50.6	-0.3534	0.5673	+0.2353	+19	-60		
30 Piscium	4.7	1.92	13.7	6 31.3	23 54.4	+ 9 27.9	+0.6671	0.5640	0.2384	+82	- 4		
33 Piscium	4.7	1.90	13.8	6 13.1	14 1 23.3	+10 53.7	+0.7207	0.5632	0.2391	+83	- 1		
Piazzi o. 1	6.0	1.89	13.7	5 45.3	3 34.3	-10 59.8	+0.7859	0.5620	0.2399	+72	+ 3		
B. A. C. 81	6.3	1.83	13.0	2 43.5	9 50.7	- 4 56.6	-0.7160	0.5589	0.2416	+ 1	-90		
14 Ceti	5.4	+1.79	+12.6	- 1 0.4	14 46.0	- 0 11.6	-1.2389	0.5566	+0.2422	-36	-90		
20 Ceti	4.9	1.72	12.8	- 1 38.4	22 38.6	+ 7 24.9	+1.3019	0.5534	0.2419	+88	+43		
26 Ceti	6.0	1.68	12.0	+ 0 52.6	15 3 32.3	-11 51.4	-0.0410	0.5516	0.2411	+37	-42		
33 Ceti	6.1	1.65	11.7	1 57.6	6 37.0	- 8 53.0	-0.3899	0.5506	0.2403	+19	-62		
Piscium	5.1	1.62	11.3	3 8.0	9 55.6	- 5 41.1	-0.7812	0.5497	0.2392	- 3	-75		
Lalande 2632	6.5	+1.58	+11.2	+ 3 3.7	14 6.2	- 1 38.9	+0.2860	0.5485	+0.2374	+56	-24		
Piscium	4.6	1.53	10.5	5 1.5	20 48.1	+ 4 49.6	-0.1271	0.5469	0.2338	+33	-46		
Piazzi i. 249	6.5	1.43	9.4	7 17.8	16 7 38.9	- 8 41.1	+0.0509	0.5452	0.2261	+42	-35		
64 Ceti	5.8	1.40	9.0	8 8.5	10 40.5	- 5 45.5	-0.1346	0.5449	0.2236	+32	-45		
Ceti	4.5	1.40	8.9	8 25.1	11 26.1	- 5 1.4	-0.2483	0.5448	0.2229	+26	-52		
Arietis	5.5	-1.35	+ 8.1	+10 11.8	16 55.3	+ 0 16.9	-0.8702	0.5443	-0.2178	- 8	-80		
25 Arietis	6.5	1.33	8.1	9 47.6	18 8.5	+ 1 27.7	-0.1896	0.5443	0.2165	+29	-47		
B. F. 310	6.3	1.32	8.4	9 9.5	19 9.6	+ 2 26.7	+0.6855	0.5443	0.2155	+89	0		
85 Ceti	6.3	1.27	7.8	10 21.1	17 1 9.7	+ 8 15.1	+0.7283	0.5441	0.2091	+90	+ 3		
38 Arietis	5.2	1.27	7.1	12 3.7	2 17.5	+ 9 20.6	-0.8074	0.5442	0.2079	- 5	-78		
W. B. ii, 1033	5.8	+1.17	+ 6.5	+12 50.1	12 17.0	- 4 59.7	+0.4032	0.5444	+0.1957	+64	-14		
Mayer 121	6.4	1.03	5.0	15 7.8	18 2 50.9	+ 9 5.4	+0.7073	0.5456	0.1753	+90	+ 5		
Piazzi iii. 103	6.3	1.03	4.6	16 14.4	3 35.3	+ 9 48.3	-0.3316	0.5457	0.1741	+21	-51		
Mayer 136	5.9	0.97	4.0	17 3.3	9 55.9	- 8 3.8	-0.1201	0.5464	0.1643	+33	-38		
B. A. C. 1239	6.3	0.93	3.9	17 2.3	13 22.7	- 4 43.9	+0.4544	0.5469	0.1587	+69	- 6		
Piazzi iii. 215	5.8	+0.94	+ 3.6	+17 56.2	13 27.0	- 4 39.7	-0.4858	0.5469	+0.1586	+13	-59		
Piazzi iii. 249	6.1	0.90	3.7	17 5.7	16 46.8	- 1 26.5	+0.9254	0.5473	0.1530	+90	+21		
B. D.+16°, 569	6.2	0.87	3.7	17 2.5	18 51.9	+ 0 34.3	+1.2987	0.5476	0.1495	+90	+59		
B. D.+18°, 624	6.0	0.84	3.0	18 31.4	22 28.2	+ 4 3.4	+0.2510	0.5481	0.1433	+55	-15		
B. A. C. 1361	6.0	0.82	2.8	18 49.9	19 0 33.0	+ 6 4.1	+0.2169	0.5484	0.1396	+52	-17		
Tauri	3.6	+0.81	+ 2.7	+18 58.7	2 13.7	+ 7 41.4	+0.2931	0.5487	+0.1366	+57	-13		
B. A. C. 1417	6.4	0.77	2.4	19 41.6	5 28.5	+10 49.7	-0.0374	0.5491	0.1307	+37	-30		
B. D.+20°, 785	5.8	0.76	2.0	20 30.1	6 37.8	+11 56.7	-0.7522	0.5493	0.1286	- 3	-69		
Tauri	4.7	0.65	1.6	21 27.6	17 57.1	- 1 7.0	-0.4488	0.5508	0.1072	+15	-51		
B. D.+21°, 755	6.3	0.64	1.4	21 9.0	18 32.2	- 0 33.1	-0.0529	0.5508	0.1061	+36	-28		
Tauri	5.2	+0.62	+ 1.6	+20 17.9	20 7.4	+ 0 58.9	+1.0312	0.5510	+0.1030	+90	+35		

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

THE STAR'S				AT CONJUNCTION IN R. A.						Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
105 Tauri	6.0	+0.63	+1.2	+21 35.0	19 20 9.1	+ 1 0.6	-0.3521	0.5510	+0.1029	+20	-44
108 Tauri	6.2	0.59	0.9	22 10.8	23 34.4	+ 4 19.0	-0.6557	0.5514	0.0962	+ 2	-64
n Tauri	5.1	0.58	0.8	22 0.1	20 1 18.6	+ 5 59.5	-0.2997	0.5516	0.0927	+23	-40
o Tauri	4.8	0.53	0.8	21 51.6	5 6.7	+ 9 39.9	+0.1928	0.5519	0.0851	+51	-13
Piazz v, 184	6.5	0.47	0.4	22 36.9	11 38.8	- 8 1.3	-0.1141	0.5524	0.0717	+33	-28
Piazz v, 192	6.0	+0.47	+0.2	+23 9.7	12 12.5	- 7 28.7	-0.6671	0.5525	+0.0705	+ 1	-64
141 Tauri	6.3	0.38	+0.3	22 24.0	20 33.2	+ 0 35.0	+0.6780	0.5528	0.0532	+90	+17
1 Geminorum	4.1	0.37	-0.1	23 16.1	21 38.2	+ 1 37.8	-0.2132	0.5529	0.0509	+27	-31
B. A. C. 1970	6.0	0.35	+0.2	22 12.3	21 0 7.0	+ 4 1.5	+1.0667	0.5529	0.0457	+90	+43
3 Geminorum	5.6	0.35	0.0	23 7.7	0 11.1	+ 4 5.4	+0.0619	0.5529	0.0455	+43	-15
6 Geminorum	6.3	+0.34	+0.1	+22 55.8	1 21.7	+ 5 13.7	+0.3315	0.5529	+0.0430	+60	- 1
7 Geminorum	3.5	0.32	+0.1	22 32.0	2 32.0	+ 6 21.6	+0.8128	0.5529	0.0405	+90	+26
8 Geminorum	6.1	0.32	-0.3	24 0.0	3 9.3	+ 6 57.6	-0.7636	0.5529	0.0392	- 5	-66
9 Geminorum	6.2	0.32	0.3	23 46.4	3 27.6	+ 7 15.3	-0.5032	0.5529	0.0386	+11	-43
μ Geminorum	3.2	0.30	0.0	22 33.7	6 11.7	+ 9 53.8	+0.9182	0.5529	0.0328	+90	+34
B. A. C. 2064	6.0	+0.28	-0.2	+23 22.7	7 21.5	+11 1.2	+0.0613	0.5528	+0.0303	+43	-14
Piazz vi, 165	6.5	0.24	0.7	24 40.1	12 44.6	- 7 46.6	-1.2188	0.5525	0.0188	-46	-65
B. A. C. 2238	5.8	0.18	0.5	23 42.7	19 23.3	- 1 21.4	-0.0923	0.5520	+0.0047	+34	-20
ω Geminorum	5.2	0.14	0.6	24 20.8	22 0 7.8	+ 3 13.4	-0.7936	0.5514	-0.0054	- 7	-66
44 Geminorum	5.9	0.13	0.3	22 46.5	1 28.9	+ 4 31.7	+0.9258	0.5512	0.0082	+90	+36
48 Geminorum	5.8	+0.10	-0.7	+24 17.0	4 43.4	+ 7 39.7	-0.7710	0.5508	-0.0150	- 5	-66
58 Geminorum	6.0	0.06	0.4	23 7.4	9 48.7	-11 25.2	+0.4038	0.5499	0.0257	+66	+ 4
B.D. +23°, 1744	6.4	0.03	0.4	23 5.0	14 8.2	- 7 14.4	+0.3164	0.5490	0.0346	+59	- 1
B.D. +23°, 1780	6.3	+0.01	0.4	23 13.9	17 53.9	- 3 36.3	+0.0084	0.5482	0.0423	+40	-18
B. A. C. 2544	6.3	-0.01	0.2	22 37.0	19 1.2	- 2 31.2	+0.6395	0.5480	0.0446	+89	+15
82 Geminorum	6.3	-0.02	-0.4	+23 22.1	21 25.1	- 0 12.1	-0.3048	0.5473	-0.0495	+22	-36
B.D. +23°, 1866	6.4	0.06	0.5	23 50.2	23 3 13.4	+ 5 24.7	-1.1433	0.5458	0.0610	-35	-66
μ^1 Cancr	6.2	0.07	0.3	22 53.9	5 43.2	+ 7 49.5	-0.2640	0.5451	0.0660	+25	-36
μ^2 Cancr	5.5	0.07	0.1	21 50.9	6 25.3	+ 8 30.3	+0.8514	0.5449	0.0673	+90	+26
B.D. +23°, 1913	6.4	0.09	-0.4	23 24.9	9 11.4	+11 11.0	-1.0770	0.5440	0.0727	-28	-67
η Cancr	5.4	-0.14	+0.2	+20 45.3	18 15.0	- 4 3.1	+1.1367	0.5411	-0.0898	+90	+45
39 Cancr	6.5	0.15	0.3	20 20.0	21 47.6	- 0 37.3	+1.2750	0.5399	0.0962	+90	+61
γ Cancr	4.9	0.16	0.1	21 48.0	23 18.0	+ 0 50.1	-0.5002	0.5393	0.0989	+11	-54
NEW MOON.											
B.D. +6°, 2543	6.5	-0.13	+1.6	+ 6 4.4	28 6 45.4	+ 5 13.6	-0.5403	0.5067	-0.2157	+11	-72
ϵ Virginis	5.1	0.09	1.4	3 49.5	15 48.0	- 9 59.0	-0.0238	0.5059	0.2191	+38	-40
Piazz xii, 142	5.9	-0.04	1.2	+ 2 21.7	29 1 35.9	- 0 27.5	-0.5684	0.5059	0.2215	+ 9	-76
80 Virginis	5.6	+0.17	0.1	- 4 55.7	30 8 23.7	+ 5 28.3	+0.5890	0.5104	0.2203	+77	- 8
Piazz xiii, 174	6.4	0.20	+0.1	5 2.1	12 51.0	+ 9 47.9	-0.2720	0.5117	0.2190	+24	-55
n Virginis	6.5	+0.22	-0.2	- 6 22.7	15 9.8	-11 57.3	+0.6849	0.5124	-0.2182	+83	- 3
Bradley 1820	6.1	0.24	0.5	7 36.4	18 40.4	- 8 32.7	+1.2562	0.5136	0.2168	+82	+38
95 Virginis	5.4	0.30	0.8	8 52.5	31 0 48.1	- 2 35.8	+1.3104	0.5159	0.2140	+81	+46
B. A. C. 4828	6.2	0.42	1.2	11 54.9	16 20.7	-11 30.8	+1.3326	0.5231	0.2042	+78	+51
B.D. -12°, 4134	6.4	+0.51	-1.6	-12 27.2	21 46.6	- 6 14.9	+0.8118	0.5260	-0.1999	+78	+ 5
SEPTEMBER.											
ξ^1 Libræ	5.7	+0.54	-1.2	-11 31.4	1 1 0.7	- 3 6.7	-0.8290	0.5279	-0.1971	-10	-90
σ^1 Libræ	6.2	0.70	1.9	15 13.0	13 58.1	+ 9 26.3	+0.6524	0.5361	0.1839	+73	- 4
ζ^1 Libræ	5.9	+0.75	-2.3	-16 23.8	17 24.7	-11 13.7	+1.2807	0.5384	-0.1799	+74	+46
ζ^3 Libræ	6.0	0.76	2.2	16 17.7	18 33.7	-10 6.9	+0.9652	0.5392	0.1785	+74	+16
ζ^4 Libræ	5.6	0.77	2.2	16 32.5	19 37.5	- 9 5.2	+1.0386	0.5400	0.1772	+74	+21
η Libræ	5.5	0.83	1.7	15 22.8	2 0 53.3	- 3 59.7	-1.1088	0.5437	0.1703	-33	-90
θ Libræ	4.4	0.90	1.7	16 27.6	5 23.5	+ 0 21.6	-0.7164	0.5471	0.1641	- 7	-90
B.D. -17°, 4502	6.4	+0.99	-2.0	-18 5.8	12 43.3	+ 7 26.6	-0.1504	0.5526	-0.1530	+22	-48

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.		
		$\Delta\alpha$	$\Delta\delta$										
ν^2 Scorpii	3.9	+1.01	-2.4	-19 13.4	2 13 38.2	+ 8 19.5	+0.8955	0.5533	-0.1515	+71	+12		
B. A. C. 5408	6.4	1.02	2.1	18 18.0	14 51.1	+ 9 29.9	-0.2582	0.5543	0.1496	+16	-55		
B. A. C. 5436	6.2	1.06	2.5	19 59.7	16 49.5	+11 24.3	+1.2302	0.5558	0.1463	+70	+42		
ψ Ophiuchi	4.6	1.09	2.3	19 49.4	19 2.7	-10 27.1	+0.7281	0.5575	0.1426	+70	+1		
χ Ophiuchi	4.9	1.10	1.7	18 14.9	20 21.8	- 9 10.8	-1.1100	0.5586	0.1403	-37	-90		
B. A. C. 5567	6.5	+1.19	-2.0	-20 13.8	3 2 16.6	- 3 28.5	+0.1671	0.5632	-0.1297	+36	-30		
Bradley 2115	5.5	1.20	1.8	19 44.9	2 51.4	- 2 54.9	-0.4105	0.5637	0.1286	+ 5	-65		
Mayer 679	5.9	1.26	1.7	20 15.8	7 49.5	+ 1 52.5	-0.4891	0.5676	0.1191	0	-72		
B. A. C. 5746	6.2	1.33	1.4	20 22.0	12 38.9	+ 6 31.4	-0.9304	0.5713	0.1094	-27	-90		
Bradley 2162	6.3	1.35	1.8	21 26.3	13 14.3	+ 7 5.5	+0.1180	0.5717	0.1081	+31	-33		
ξ Ophiuchi	4.4	+1.45	-1.2	-21 0.9	19 26.4	-10 56.2	-0.9483	0.5764	-0.0949	-30	-90		
B. A. C. 5866	5.9	1.46	1.1	21 21.4	20 58.7	- 9 27.4	-0.7377	0.5776	0.0915	-17	-90		
52 Ophiuchi	6.4	1.53	0.9	21 58.9	4 1 20.2	- 5 15.7	-0.4679	0.5807	0.0816	- 3	-71		
58 Ophiuchi	4.8	1.57	0.5	21 38.3	4 39.6	- 2 3.8	-1.0778	0.5830	0.0738	-41	-90		
4 Sagittarii	4.8	1.70	0.8	23 48.5	11 13.3	+ 4 14.6	+0.7155	0.5874	0.0579	+66	+ 2		
B. A. C. 6088	5.7	+1.69	-0.2	-22 46.7	12 5.1	+ 5 4.4	-0.3877	0.5880	-0.0558	- 1	-65		
7 Sagittarii	5.5	1.71	0.6	24 16.9	12 26.3	+ 5 24.8	+1.1309	0.5882	0.0549	+66	+33		
9 Sagittarii	6.0	1.72	0.6	24 21.8	12 50.7	+ 5 48.2	+1.1914	0.5885	0.0539	+66	+41		
Bradley 2276	5.2	1.76	-0.1	23 43.2	15 58.8	+ 8 49.0	+0.3767	0.5904	0.0460	+40	-18		
24 Sagittarii	5.7	1.88	+0.7	24 6.1	5 0 42.2	- 6 48.4	+0.4594	0.5951	0.0233	+44	-14		
Bradley 2335	5.8	+1.90	+1.1	-23 35.0	2 30.9	- 5 4.0	-0.1038	0.5960	-0.0184	+11	-46		
26 Sagittarii	6.1	1.92	1.2	23 55.2	3 48.7	- 3 49.4	+0.2147	0.5966	0.0150	+28	-27		
28 Sagittarii	5.6	1.92	1.8	22 29.3	5 34.6	- 2 7.7	-1.2560	0.5974	0.0102	-65	-90		
ν^1 Sagittarii	5.0	1.96	2.0	22 51.5	8 36.2	+ 0 46.6	-0.8986	0.5987	0.0020	-35	-90		
ν^2 Sagittarii	5.1	1.97	2.1	22 47.2	8 58.0	+ 1 7.5	-0.9717	0.5988	0.0010	-40	-90		
Piazzixviii, 225	5.9	+1.98	+2.0	-23 17.5	9 18.4	+ 1 27.0	-0.4619	0.5990	-0.0001	-10	-71		
B. A. C. 6465	6.4	2.02	1.6	25 0.0	10 10.7	+ 2 17.3	+1.2638	0.5993	+0.0023	+65	+58		
B. A. C. 6485	6.3	2.00	2.4	22 49.5	11 28.9	+ 3 32.3	-0.9249	0.5998	0.0059	-37	-90		
B. A. C. 6490	5.8	2.04	1.7	24 58.4	11 46.2	+ 3 48.8	+1.2437	0.5999	0.0067	+65	+51		
URANUS				23 13.8	11 46.4	+ 3 49.0	-0.5145	0.6005	0.0067	-12	-75		
Mayer 787	6.1	+2.06	+2.1	-24 48.1	13 59.6	+ 5 56.8	+1.0898	0.6006	+0.0128	+65	+30		
Lalande 35745	6.5	2.04	2.6	23 20.1	14 12.5	+ 5 9.2	-0.3836	0.6007	0.0134	- 5	-64		
B. A. C. 6576	6.1	2.08	2.5	24 20.2	16 48.1	+ 8 38.5	+0.6672	0.6015	0.0206	+60	- 1		
Piazzixix, 61	5.5	2.08	3.4	22 34.4	18 46.8	+10 32.3	-1.0577	0.6021	0.0261	-45	-90		
χ^1 Sagittarii	4.9	2.14	2.9	24 41.2	20 31.2	-11 47.5	+1.1135	0.6025	0.0309	+65	+32		
χ^3 Sagittarii	5.5	+2.13	+3.2	-24 8.5	20 36.9	-11 42.1	+0.5698	0.6025	+0.0311	+53	- 7		
53 Sagittarii	6.3	2.18	4.0	23 38.2	6 2 5.3	- 6 27.2	+0.2741	0.6035	0.0463	+34	-24		
Bradley 2488	6.1	2.18	4.0	23 38.3	2 12.0	- 6 20.7	+0.2819	0.6036	0.0466	+35	-23		
B. A. C. 6814	6.3	2.24	4.3	24 10.2	7 35.8	- 1 10.3	+1.1017	0.6042	0.0616	+66	+31		
B. A. C. 6864	6.1	2.25	5.3	22 59.3	10 18.5	+ 1 25.7	+0.1019	0.6043	0.0691	+26	-34		
B. A. C. 6878	6.5	+2.26	+5.4	-22 51.1	11 12.2	+ 2 17.2	+0.0286	0.6043	+0.0715	+22	-38		
4 Capricorni	5.7	2.30	6.3	22 5.6	16 38.7	+ 7 30.2	-0.2967	0.6042	0.0863	+ 7	-58		
Piazzixx, 146	6.2	2.34	6.7	22 41.7	21 1.2	+11 41.9	+0.7038	0.6038	0.0980	+67	0		
17 Capricorni	5.8	2.38	7.8	21 50.8	7 3 23.4	- 6 11.4	+0.5398	0.6029	0.1146	+57	- 9		
20 Capricorni	6.2	2.38	8.9	19 23.4	8 34.3	- 1 13.2	-1.2577	0.6016	0.1276	-56	-90		
γ Capricorni	4.8	+2.40	+9.0	-20 13.0	10 24.8	+ 0 32.8	-0.2025	0.6011	+0.1322	+16	-52		
27 Capricorni	6.1	2.43	9.0	20 55.4	12 23.0	+ 2 26.2	+0.7591	0.6005	0.1369	+69	+ 4		
ϕ Capricorni	5.3	2.44	9.3	21 1.9	14 44.2	+ 4 41.7	+1.1933	0.5998	0.1426	+69	+38		
30 Capricorni	5.4	2.40	9.9	18 22.1	15 39.8	+ 5 35.1	-1.2951	0.5995	0.1447	-61	-90		
B. A. C. 7463	6.5	2.44	10.3	19 32.8	20 19.7	+10 3.6	+0.5646	0.5978	0.1554	+62	- 8		
γ Capricorni	3.7	+2.43	+11.1	-17 4.5	8 0 17.4	-10 8.2	-1.2304	0.5963	+0.1641	-48	-90		
κ Capricorni	4.8	2.46	10.9	19 17.0	1 16.7	- 9 11.3	+1.1008	0.5959	0.1662	+71	+27		
δ Capricorni	2.9	2.44	11.3	16 32.5	3 1.2	- 7 30.9	-1.2971	0.5951	0.1698	-57	-90		
B. D.-17°, 6389	6.5	2.44	11.4	17 16.3	4 16.3	- 6 18.8	-0.3666	0.5946	0.1724	+11	-62		
29 Aquarii	6.5	2.46	12.0	17 24.3	9 6.4	- 1 40.1	+0.6213	0.5925	0.1821	+69	- 6		
50 Aquarii	5.9	+2.44	+13.2	-13 59.5	17 55.7	+ 6 48.4	-1.0436	0.5882	+0.1980	-26	-90		

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.											
SEPTEMBER.											
THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
Bradley 2961	6.2	+2.44	+13.4	-13 23.0	8 20 10.6	+ 8 58.2	-1.1908	0.5871	+0.2017	-39	-90
56 Aquarii	6.1	2.44	13.3	15 3.2	20 16.7	+ 9 4.0	+0.4646	0.5871	0.2019	+60	-14
72 Aquarii	4.4	2.44	14.0	14 4.5	9 4 8.7	- 7 22.0	+1.1432	0.5831	0.2138	+76	+29
74 Aquarii	5.8	2.42	14.3	12 6.1	5 44.9	- 5 49.5	-0.4431	0.5823	0.2160	+12	-67
B.D.-11°, 6032	6.3	2.41	14.8	11 11.1	14 31.7	+ 2 37.6	+0.6041	0.5779	0.2267	+74	- 7
ψ^1 Aquarii	4.5	+2.42	+14.9	- 9 35.1	15 1.7	+ 3 6.5	-0.8497	0.5776	+0.2273	-10	-90
ψ^2 Aquarii	4.6	2.40	14.9	9 40.8	15 53.0	+ 3 55.8	-0.5611	0.5772	0.2282	+ 7	-76
ψ^3 Aquarii	5.2	2.40	14.9	10 6.6	16 19.4	+ 4 21.3	-0.0402	0.5770	0.2286	+35	-42
B.D.-10°, 6120	6.3	2.39	15.1	9 46.1	20 33.0	+ 8 25.5	+0.6003	0.5749	0.2328	+75	- 7
B. A. C. 8214	6.5	2.38	15.3	7 58.2	23 18.4	+11 4.8	-0.5183	0.5736	0.2352	+10	-73
Mayer 1012	6.3	+2.37	+15.3	- 6 53.2	10 4 50.3	- 7 35.5	-0.2680	0.5710	+0.2394	+24	-55
30 Piscium	4.7	2.35	15.5	6 31.3	10 35.5	- 2 2.8	+0.7600	0.5685	0.2427	+79	+ 1
33 Piscium	4.7	2.34	15.7	6 13.1	12 3.0	- 0 38.4	+0.8166	0.5679	0.2435	+84	+ 5
Piazzi o, 1	6.0	2.33	15.6	5 45.3	14 12.0	+ 1 26.0	+0.8863	0.5670	0.2444	+84	+ 9
B. A. C. 81	6.3	2.31	15.4	2 43.4	20 21.8	+ 7 22.6	-0.5883	0.5646	0.2464	+ 8	-78
14 Ceti	5.4	+2.29	+15.3	- 1 0.4	11 1 11.4	-11 58.0	-1.0946	0.5628	+0.2472	-23	-90
26 Ceti	6.0	2.24	15.0	+ 0 52.7	13 40.5	+ 0 4.9	+0.1197	0.5590	0.2464	+46	-33
33 Ceti	6.1	2.21	14.8	1 57.6	16 40.5	+ 2 58.6	-0.2188	0.5582	0.2456	+28	-52
γ Piscium	5.1	2.20	14.5	3 8.1	19 54.1	+ 6 5.6	-0.5986	0.5575	0.2445	+ 8	-79
Lalande 2632	6.5	2.18	14.4	3 3.7	23 58.0	+10 1.0	+0.4634	0.5566	0.2428	+68	-15
ν Piscium	4.6	+2.15	+13.8	+ 5 1.6	12 6 28.8	- 7 41.6	+0.0677	0.5554	+0.2391	+43	-35
Piazzi i, 249	6.5	2.10	12.9	7 17.9	17 0.6	+ 2 28.6	+0.2608	0.5540	0.2313	+55	-24
64 Ceti	5.8	2.07	12.6	8 8.6	19 56.8	+ 5 18.8	+0.0823	0.5537	0.2286	+44	-33
ξ^1 Ceti	4.5	2.08	12.5	8 25.1	20 41.0	+ 6 1.4	-0.0287	0.5537	0.2280	+38	-39
ξ Arietis	5.5	2.05	11.7	10 11.8	13 2 0.2	+11 9.6	-0.6343	0.5534	0.2227	+ 6	-77
25 Arietis	6.5	+2.02	+11.7	+ 9 47.6	3 11.1	-11 41.8	+0.0383	0.5533	+0.2214	+42	-35
B. F. 310	6.3	2.03	11.9	9 9.5	4 10.3	-10 44.6	+0.9024	0.5533	0.2204	+90	+12
31 Arietis	5.7	2.04	10.9	12 3.1	7 18.7	- 7 42.6	-1.3580	0.5532	0.2169	-58	-78
85 Ceti	6.3	1.99	11.3	10 21.2	9 59.3	- 5 7.6	+0.9515	0.5531	0.2137	+90	+17
38 Arietis	5.2	2.00	10.7	12 3.7	11 5.0	- 4 4.1	-0.5610	0.5531	0.2124	+ 9	-70
W. B. ii, 1033	5.8	+1.93	+ 9.9	+12 50.2	20 45.9	+ 5 17.0	+0.6421	0.5532	+0.1997	+85	0
Mayer 121	6.4	1.83	8.2	15 7.9	14 10 53.6	- 5 4.2	+0.9526	0.5538	0.1785	+90	+20
Piazzi iii, 103	6.3	1.83	7.8	16 14.4	11 36.6	- 4 22.7	-0.0717	0.5539	0.1773	+36	-36
Mayer 136	5.9	1.79	7.0	17 3.3	17 46.2	+ 1 34.3	+0.1399	0.5542	0.1670	+48	-24
B. A. C. 1239	6.3	1.75	6.8	17 2.3	21 7.2	+ 4 48.4	+0.7081	0.5545	0.1613	+90	+ 7
Piazzi iii, 215	5.8	+1.76	+ 6.5	+17 56.2	21 11.4	+ 4 52.5	-0.2198	0.5545	+0.1611	+28	-42
Piazzi iii, 249	6.1	1.72	6.5	17 5.8	15 0 25.7	+ 8 0.0	+1.1742	0.5547	0.1554	+90	+41
ω^1 Tauri	5.5	1.74	6.0	19 22.1	0 54.9	+ 8 28.3	-1.1330	0.5535	0.1545	-30	-71
B.D.+18°, 624	6.0	1.68	5.6	18 31.5	5 58.0	-10 39.1	+0.5098	0.5551	0.1453	+74	- 2
B. A. C. 1361	6.0	1.67	5.3	18 49.9	7 59.5	- 8 41.8	+0.4764	0.5552	0.1415	+71	- 4
ϵ Tauri	3.6	+1.65	+ 5.2	+18 58.7	9 37.7	- 7 7.0	+0.5520	0.5553	+0.1384	+77	+ 1
B. A. C. 1417	6.4	1.62	4.7	19 41.6	12 47.5	- 4 3.7	+0.2255	0.5555	0.1323	+53	16
B.D.+20°, 785	5.8	1.62	4.3	22 30.1	13 55.2	- 2 58.4	-0.4809	0.5556	0.1301	+13	-55
ϵ Tauri	4.7	1.50	3.4	21 27.6	10 58.8	+ 7 42.4	-0.1824	0.5560	0.1081	+29	-35
B.D.+21°, 755	6.3	1.50	3.2	21 9.0	1 33.1	+ 8 15.5	-0.2092	0.5561	0.1069	+52	-14
ζ Tauri	5.2	+1.48	+ 3.4	+20 17.9	3 6.4	+ 9 45.5	+1.2818	0.5561	+0.1037	+90	+62
105 Tauri	6.0	1.49	2.9	21 35.1	3 8.0	+ 9 47.1	-0.0873	0.5561	0.1036	+35	-20
108 Tauri	6.2	1.46	2.4	22 10.8	6 29.0	-10 58.9	-0.3890	0.5562	0.0967	+18	-46
η Tauri	5.1	1.44	2.4	22 0.2	8 11.1	- 9 20.4	-0.0370	0.5562	0.0932	+38	-25
θ Tauri	4.8	1.39	2.2	21 51.6	11 54.8	- 5 44.3	+0.4494	0.5562	0.0853	+69	+ 1
Piazzi v, 184	6.5	+1.33	+ 1.5	+22 36.0	18 20.0	+ 0 27.5	+0.1426	0.5562	+0.0717	+48	-14
Piazzi v, 192	6.0	1.33	1.2	23 9.7	18 53.0	+ 0 59.3	-0.4058	0.5561	0.0705	+17	-44
B.D.+24°, 1033	5.8	1.27	0.4	24 14.2	17 0 56.3	+ 6 50.1	-1.1805	0.5558	0.0575	-40	60
141 Tauri	6.3	1.23	0.9	22 24.0	3 5.9	+ 8 55.1	+0.9237	0.5557	0.0528	+90	+32
1 Geminorum	4.1	1.22	0.5	23 16.1	4 10.0	+ 9 57.1	+0.0389	0.5556	0.0505	+42	-17
3 Geminorum	5.6	+1.20	+ 0.4	+23 7.8	6 40.7	-11 37.5	+0.3103	0.5554	+0.0450	+59	- 3

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'n's from 1908.0.		Apparent Declination.	Washington Mean Time.			Hour Angle, H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d	h	m	h						m
5 Geminorum	5.9	+1.20	-0.1	+24 26.5	17	7	27.7	-10 52.1	-1.0763	0.5553	+0.0433	-28	-66
6 Geminorum	6.3	1.18	+0.5	22 55.8		7	50.4	-10 30.2	+0.5771	0.5553	0.0425	+81	+12
7 Geminorum	3.5	1.16	+0.5	22 32.1		8	59.7	-9 23.2	+1.0542	0.5552	0.0400	+90	+42
8 Geminorum	6.1	1.17	-0.1	24 0.0		9	36.6	-8 47.6	-0.5113	0.5551	0.0386	+11	-49
9 Geminorum	6.2	1.16	0.0	23 46.4		9	54.6	-8 30.3	-0.2530	0.5551	0.0380	+25	-32
μ Geminorum	3.2	+1.13	+0.2	+22 33.7		12	36.7	-5 53.7	+1.1567	0.5548	+0.0321	+90	+52
B. A. C. 2064	6.0	1.11	-0.1	23 22.7		13	45.6	-4 47.2	+0.3048	0.5547	0.0296	+59	-1
Piazz i vi, 165	6.5	1.06	0.8	24 40.0		19	5.2	+0 21.4	-0.9715	0.5539	0.0180	-19	-65
B. A. C. 2238	5.8	0.98	0.9	23 42.6	18	1	40.1	+6 42.9	+0.1421	0.5528	+0.0037	+48	-8
ω Geminorum	5.2	0.93	1.3	24 20.8		6	22.3	+11 15.4	-0.5600	0.5519	-0.0064	+8	-49
44 Geminorum	5.9	+0.90	-0.9	+22 46.5		7	42.8	-11 26.8	+1.1494	0.5516	-0.0093	+90	+53
48 Geminorum	5.8	0.88	1.6	24 17.0		10	55.9	-8 20.3	-0.5423	0.5509	0.0162	+9	-49
58 Geminorum	6.0	0.82	1.4	23 7.3		15	59.5	-3 27.0	+0.6216	0.5497	0.0269	+87	+16
B.D.+23°, 1744	6.4	0.77	1.5	23 5.0		20	17.7	+0 42.6	+0.5297	0.5485	0.0359	+77	+10
Mayer 319	6.3	0.75	2.1	24 34.0		22	45.1	+3 5.0	-1.1959	0.5478	0.0410	-42	-66
B. A. C. 2514	6.0	+0.74	-2.1	+24 25.9		23	11.9	+3 30.9	-1.0654	0.5477	-0.0419	-27	-66
B.D.+23°, 1780	6.3	0.73	1.7	23 13.9	19	0	2.4	+4 19.7	+0.2187	0.5475	0.0436	+53	-7
B. A. C. 2544	6.3	0.71	1.5	22 37.0		1	9.5	+5 24.6	+0.8461	0.5472	0.0459	+90	+28
82 Geminorum	6.3	0.69	1.9	23 22.1		3	32.9	+7 43.2	-0.0978	0.5464	0.0508	+34	-25
B.D.+23°, 1866	6.4	0.64	2.3	23 50.1		9	20.3	-10 40.9	-0.9414	0.5446	0.0624	-17	-66
μ^1 Cancri	6.2	+0.60	-2.0	+22 53.9		11	49.8	-8 16.3	-0.0682	0.5438	-0.0673	+36	-25
μ^2 Cancri	5.5	0.60	1.8	21 50.9		12	31.7	-7 35.8	+1.0432	0.5436	0.0687	+90	+39
B.D.+23°, 1913	6.4	0.57	2.3	23 24.9		15	17.6	-4 55.4	-0.8838	0.5426	0.0741	-12	-67
γ Cancri	4.9	0.44	2.1	21 48.0	20	5	23.9	+8 43.5	-0.3300	0.5376	0.1003	+21	-43
B.D.+16°, 2077	6.3	0.12	1.1	16 12.3	21	22	17.9	+0 21.6	+0.4100	0.5221	0.1638	+65	-10
η Leonis	3.6	+0.12	-1.3	+17 12.7		23	7.6	+1 9.8	-0.8440	0.5218	-0.1649	-8	-73
42 Leonis	6.1	0.08	1.0	15 26.4	22	6	36.4	+8 25.2	-0.1435	0.5193	0.1741	+32	-41
ι Leonis	5.8	0.05	0.8	+14 36.6		11	59.2	-10 21.5	-0.1754	0.5175	0.1803	+30	-43
NEW MOON.													
Bradley 1820	6.1	+0.04	-0.1	-7 36.4	27	0	23.7	-1 2.0	+1.0710	0.5157	-0.2197	+82	+21
Piazz xiii, 287	6.5	0.07	0.2	8 49.0		5	16.0	+3 41.7	+1.3172	0.5174	0.2174	+81	+46
95 Virginis	5.4	0.07	0.2	8 52.5		6	29.5	+4 53.1	+1.1145	0.5179	0.2168	+81	+25
B. A. C. 4828	6.2	0.13	0.3	11 54.9		21	58.6	-4 5.6	+1.1128	0.5246	0.2065	+78	+25
B.D.-12°, 4134	6.4	0.21	0.7	12 27.2	28	3	23.8	+1 9.8	+0.5842	0.5273	0.2020	+71	-8
ϵ^1 Libræ	5.7	+0.22	-0.4	-11 31.4		6	37.6	+4 17.6	-1.0636	0.5289	-0.1990	-25	-90
ϵ^2 Libræ	6.2	0.34	1.0	15 13.0		19	35.3	-7 9.1	+0.4058	0.5363	0.1853	+57	-18
ζ^1 Libræ	5.9	0.37	1.3	16 23.8		23	2.4	-3 48.6	+1.0333	0.5383	0.1811	+74	+20
ζ^2 Libræ	6.0	0.38	1.2	16 17.7	29	0	11.6	-2 41.7	+0.7157	0.5391	0.1797	+74	0
ζ^3 Libræ	5.6	0.39	1.3	16 32.5		1	15.6	-1 39.7	+0.7884	0.5397	0.1783	+73	+4
θ Libræ	4.4	+0.49	-1.0	-16 27.6		11	4.3	+7 49.7	-0.9828	0.5460	-0.1648	-24	-90
B.D.-17°, 4502	6.4	0.56	1.3	18 5.8		18	27.3	-9 2.1	-0.4187	0.5507	0.1534	+8	-66
1^a Scorpil	3.9	0.58	1.6	19 13.4		19	22.6	-8 8.7	+0.6335	0.5514	0.1519	+67	-5
B. A. C. 5408	6.4	0.58	1.4	18 18.0		20	36.2	-6 57.6	-0.5284	0.5522	0.1499	+1	-75
B. A. C. 5436	6.2	0.62	1.7	19 59.7		22	35.6	-5 2.2	+0.9691	0.5535	0.1466	+70	+17
ψ Ophiuchi	4.6	+0.64	-1.6	-19 49.4	30	0	50.2	-2 52.2	+0.4629	0.5550	-0.1427	+55	-14
B. A. C. 5567	6.5	0.73	1.4	20 13.8		8	9.0	+4 11.3	-0.1048	0.5599	0.1296	+21	-46
Bradley 2115	5.5	0.74	1.2	19 44.9		8	44.3	+4 45.4	-0.6873	0.5602	0.1285	-10	-90
Mayer 679	5.9	0.80	1.2	20 15.8		13	46.4	+9 36.9	-0.7680	0.5635	0.1188	-16	-90
B. A. C. 5746	6.2	0.86	1.0	20 22.0		18	40.3	-9 39.7	-1.2146	0.5667	0.1089	-50	-90
Bradley 2162	6.3	+0.87	-1.4	-21 26.3		19	16.3	-9 5.1	-0.1559	0.5671	-0.1076	+17	-49

OCTOBER.

ξ Ophiuchi	4.4	+0.97	-1.0	-21 0.9	1	1	34.8	-3 0.4	-1.2337	0.5710	-0.0942	-55	-90
B. A. C. 5866	5.9	+0.98	-0.9	-21 21.4		3	8.9	-1 29.7	-1.0209	0.5720	-0.0908	-35	-90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.												
OCTOBER.												
THE STAR'S					AT CONJUNCTION IN R. A.					Limiting		
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.	
		$\Delta\alpha$	$\Delta\delta$									
		α	δ	α	d h m	h m						
52 Ophiuchi	6.4	+1.04	-0.8	-21 58.9	1 7 35.5	+ 2 47.0	-0.7477	0.5746	-0.0808	-19	-90	
4 Sagittarii	4.8	1.20	1.0	23 48.5	17 41.8	-11 29.4	+0.4531	0.5801	0.0571	+46	-14	
B. A. C. 6088	5.7	1.20	0.4	22 46.7	18 34.8	-10 38.4	-0.6640	0.5806	0.0550	-16	-90	
7 Sagittarii	5.5	1.22	0.9	24 16.9	18 56.5	-10 17.5	+0.8745	0.5807	0.0541	+66	+12	
9 Sagittarii	6.0	1.22	0.9	24 21.8	19 21.5	-9 53.5	+0.9360	0.5809	0.0530	+66	+17	
Bradley 2276	5.2	+1.26	-0.5	-23 43.2	22 34.2	- 6 48.1	+0.1122	0.5825	-0.0451	+25	-33	
Lalande 33732	6.4	1.33	-0.6	24 57.4	2 31.5	- 3 0.0	+1.2297	0.5842	0.0352	+65	+47	
24 Sagittarii	5.7	1.39	+0.1	24 6.1	7 31.5	+ 1 48.4	+0.2012	0.5863	0.0225	+28	-28	
Bradley 2335	5.8	1.42	0.4	23 35.0	9 23.2	+ 3 35.8	-0.3690	0.5870	0.0177	- 4	-64	
26 Sagittarii	6.1	1.44	0.4	23 55.2	10 43.3	+ 4 52.7	-0.0449	0.5875	0.0142	+14	-42	
Piazzi xviii, 155	5.7	+1.47	+0.1	-25 6.2	11 53.3	+ 6 0.1	+1.1574	0.5879	-0.0112	+65	+37	
1st Sagittarii	5.0	1.50	1.2	22 51.5	15 39.1	+ 9 37.1	-1.1716	0.5891	0.0014	-56	-90	
1st Sagittarii	5.1	1.51	1.3	22 47.2	16 1.6	+ 9 58.6	-1.2455	0.5892	-0.0004	-64	-90	
Piazzi xviii, 225	5.9	1.51	1.1	23 17.5	16 22.6	+10 18.8	-0.7275	0.5893	+0.0006	-25	-90	
B. A. C. 6465	6.4	1.53	0.6	25 0.0	17 16.5	+11 10.6	+1.0253	0.5895	0.0029	+65	+24	
B. A. C. 6479	6.4	+1.56	+0.7	-25 4.2	18 5.7	+11 57.9	+1.1004	0.5898	+0.0051	+65	+31	
B. A. C. 6485	6.3	1.54	1.5	22 49.5	18 37.0	-11 32.0	-1.1965	0.5899	0.0065	-58	-90	
URANUS				23 13.8	18 49.1	-11 20.4	-0.7803	0.5897	0.0069	-27	-90	
B. A. C. 6490	5.8	1.57	0.6	24 58.4	18 54.9	-11 14.9	+1.0062	0.5900	0.0073	+65	+22	
Mayer 787	6.1	1.60	1.0	24 48.1	21 12.4	- 9 2.7	+0.8521	0.5905	0.0133	+65	+11	
Lalande 35745	6.5	+1.58	+1.6	-23 20.1	21 25.8	- 8 49.9	-0.6442	0.5906	+0.0139	-18	-90	
B. A. C. 6576	6.1	1.64	1.4	24 20.2	3 0.2	- 6 15.8	+0.4255	0.5912	0.0210	+41	-16	
χ^1 Sagittarii	4.9	1.69	1.7	24 41.2	3 56.4	- 2 34.7	+0.8829	0.5919	0.0312	+65	+13	
χ^3 Sagittarii	5.5	1.68	2.0	24 8.5	4 2.3	- 2 29.0	+0.3305	0.5919	0.0315	+36	-21	
χ^2 Sagittarii	5.8	1.75	2.1	24 55.2	8 10.6	+ 1 29.4	+1.2744	0.5925	0.0425	+65	+62	
53 Sagittarii	6.3	+1.75	+2.6	-23 38.2	9 41.6	+ 2 56.9	+0.0358	0.5926	+0.0466	+21	-38	
Bradley 2488	6.1	1.76	2.7	23 38.4	9 48.5	+ 3 3.5	+0.0439	0.5926	0.0469	+21	-37	
B. A. C. 6814	6.3	1.83	2.8	24 10.2	15 23.1	+ 8 24.8	+0.8837	0.5929	0.0616	+66	+12	
B. A. C. 6864	6.1	1.86	3.8	22 59.4	18 11.4	+11 6.4	-0.1292	0.5930	0.0690	+15	-48	
B. A. C. 6878	6.5	1.87	3.9	22 51.2	19 7.0	+11 59.8	-0.2026	0.5930	0.0714	+11	-52	
4 Capricorni	5.7	+1.93	+4.7	-22 5.6	4 0 44.8	- 6 36.0	-0.5259	0.5927	+0.0861	- 5	-76	
Piazzi xx, 146	6.2	1.99	4.9	22 41.7	5 16.5	- 2 14.9	+0.4977	0.5922	0.0976	+53	-12	
17 Capricorni	5.8	2.06	6.0	21 50.8	11 52.0	+ 4 5.0	+0.3408	0.5912	0.1141	+44	-21	
η Capricorni	4.8	2.11	7.2	20 13.0	19 8.2	+11 4.0	-0.4016	0.5897	0.1314	+ 5	-65	
χ Capricorni	5.3	2.15	7.0	21 33.7	20 46.6	-11 21.4	+1.1636	0.5893	0.1353	+68	+35	
27 Capricorni	6.1	+2.15	+7.2	-20 55.5	21 10.4	-10 58.5	+0.5791	0.5892	+0.1362	+61	- 7	
ϕ Capricorni	5.3	2.17	7.5	21 1.9	23 36.5	- 8 38.1	+1.0246	0.5885	0.1418	+69	+22	
B. A. C. 7463	6.5	2.21	8.5	19 32.8	5 23.4	- 3 4.7	+0.3964	0.5868	0.1546	+51	-18	
ϵ Capricorni	4.7	2.24	8.7	19 52.6	8 14.8	- 0 19.9	+1.1743	0.5858	0.1607	+70	+34	
κ Capricorni	4.8	2.26	9.1	19 17.0	10 30.3	+ 1 50.3	+0.9506	0.5852	0.1653	+71	+15	
B. D. -17°, 6389	6.5	+2.25	+9.9	-17 16.3	13 35.8	+ 4 48.7	-0.5325	0.5840	+0.1716	+ 2	-75	
29 Aquarii	6.5	2.30	10.4	17 24.3	18 35.0	+ 9 36.6	+0.4804	0.5823	0.1812	+60	-14	
50 Aquarii	5.9	2.33	12.0	13 59.6	3 40.2	- 5 39.0	-1.1861	0.5789	0.1973	-38	-90	
Bradley 2961	6.2	2.34	12.3	13 23.0	5 58.9	- 3 25.4	-1.3293	0.5780	0.2011	-58	-90	
56 Aquarii	6.1	2.36	11.9	15 3.2	6 5.2	- 3 19.4	+0.3473	0.5780	0.2013	+53	-21	
τ^1 Aquarii	5.6	+2.40	+12.6	-14 32.3	13 22.2	+ 3 41.3	+1.3432	0.5752	+0.2123	+75	+56	
τ^2 Aquarii	4.4	2.39	12.7	14 4.5	14 9.8	+ 4 27.1	+1.0533	0.5750	0.2134	+76	+21	
74 Aquarii	5.8	2.39	13.2	12 6.1	15 48.4	+ 6 2.1	-0.5469	0.5743	0.2157	+ 7	-75	
B. D. -11°, 6032	6.3	2.43	13.9	11 11.1	7 0 47.5	- 9 18.5	+0.5349	0.5710	0.2268	+69	-11	
ψ^1 Aquarii	4.5	2.44	14.2	9 35.1	1 18.0	- 8 49.1	-0.9314	0.5708	0.2274	-14	-90	
ψ^2 Aquarii	4.6	+2.42	+14.3	- 9 40.8	2 10.4	- 7 58.6	-0.6377	0.5705	+0.2283	+ 3	-84	
ψ^3 Aquarii	5.2	2.43	14.2	10 6.6	2 37.4	- 7 32.6	-0.1106	0.5703	0.2288	+31	-46	
B. D. -10°, 6120	6.3	2.44	14.5	9 46.1	6 56.0	- 3 23.4	+0.5473	0.5689	0.2332	+71	-11	
B. A. C. 8214	6.5	2.45	14.9	7 58.2	9 44.4	- 0 41.0	-0.5726	0.5680	0.2357	+ 8	-77	
Mayer 1012	6.3	2.46	15.2	6 53.2	15 21.8	+ 4 44.2	-0.3041	0.5662	0.2402	+22	-57	
30 Piscium	4.7	+2.48	+15.4	- 6 31.3	21 11.8	+10 21.8	+0.7468	0.5645	+0.2440	+81	0	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name	Mag.	Red'ns from 1908.0		Apparent Declination.	Washington Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		α	δ	$\circ$	d h m	h m				$\circ$	$\circ$
33 Piscium	4.7	+2.48	+15.6	- 6 13.1	7 22 40.4	+11 47.2	+0.8077	0.5641	+0.2448	+84	+ 4
Piazz i o, 1	6.0	2.49	15.6	5 45.3	8 0 50.9	-10 6.9	+0.8836	0.5635	0.2458	+84	+ 8
B. A. C. 81	6.3	2.50	15.9	2 43.4	7 4.2	- 4 6.7	-0.5791	0.5621	0.2482	+ 9	-77
14 Ceti	5.4	2.52	16.0	- 1 0.4	11 55.7	+ 0 34.5	-1.0718	0.5611	0.2493	-21	-90
26 Ceti	6.0	2.53	16.0	+ 0 52.7	9 0 26.8	-11 20.6	+0.1815	0.5591	0.2493	+50	-30
33 Ceti	6.1	+2.53	+16.0	+ 1 57.6	3 26.6	- 8 27.1	-0.1484	0.5588	+0.2487	+32	-48
f Piscium	5.1	2.53	15.9	3 8.1	6 39.7	- 5 20.7	-0.5185	0.5585	0.2478	+12	-72
Lalande 2632	6.5	2.54	15.7	3 3.8	10 42.6	- 1 26.1	+0.5532	0.5582	0.2462	+75	-10
v Piscium	4.6	2.54	15.4	5 1.6	17 10.9	+ 4 48.6	+0.1759	0.5579	0.2429	+50	-30
Piazz i, 249	6.5	2.55	14.7	7 17.9	10 3 36.2	- 9 7.6	+0.3950	0.5579	0.2354	+63	-17
64 Ceti	5.8	+2.54	+14.4	+ 8 8.6	6 30.0	- 6 19.8	+0.2246	0.5580	+0.2329	+53	-26
ξ Ceti	4.5	2.55	14.4	8 25.2	7 13.6	- 5 37.8	+0.1159	0.5580	0.2322	+47	-32
ξ Arietis	5.5	2.56	13.9	10 11.9	12 28.1	- 0 34.2	-0.4730	0.5583	0.2270	+15	-66
25 Arietis	6.5	2.53	13.7	9 47.6	13 37.8	+ 0 33.1	+0.1978	0.5583	0.2258	+51	-27
B. F. 310	6.3	2.54	13.9	9 9.5	14 36.1	+ 1 29.4	+1.0582	0.5584	0.2248	+90	+23
31 Arietis	5.7	+2.57	+13.2	+12 3.2	17 41.3	+ 4 28.1	-1.1790	0.5586	+0.2212	-31	-78
85 Ceti	6.3	2.54	13.3	10 21.2	20 19.0	+ 7 0.3	+1.1190	0.5588	0.2182	+90	+28
38 Arietis	5.2	2.56	12.9	12 3.8	21 23.4	+ 8 2.5	-0.3794	0.5590	0.2168	+20	-58
W. B. ii, 1033	5.8	2.53	12.0	12 50.2	11 6 52.6	- 6 48.2	+0.8331	0.5598	0.2042	+90	+10
Mayer 121	6.4	2.50	10.3	15 7.9	20 40.5	+ 6 30.7	+1.1644	0.5613	0.1826	+90	+37
Piazz iii, 103	6.3	+2.51	+10.0	+16 14.4	21 22.5	+ 7 11.2	+0.1517	0.5615	+0.1815	+49	-24
Mayer 136	5.9	2.49	9.1	17 3.4	12 3 22.7	-11 1.1	+0.3705	0.5621	0.1710	+63	-12
B. A. C. 1239	6.3	2.46	8.7	17 2.4	6 38.6	- 7 52.2	+0.9374	0.5624	0.1650	+90	+21
Piazz iii, 215	5.8	2.48	8.6	17 56.2	6 42.6	- 7 48.4	+0.0196	0.5624	0.1649	+41	-29
ω Tauri	5.5	2.48	8.0	19 22.1	10 20.2	- 4 18.4	-0.8785	0.5627	0.1581	-10	-71
B.D.+18°, 624	6.0	+2.44	+ 7.4	+18 31.5	15 15.2	+ 0 26.1	+0.7523	0.5632	+0.1487	+90	+12
Piazz iv, 53	6.1	2.46	6.8	20 36.4	16 4.8	+ 1 13.9	-1.2922	0.5632	0.1470	-53	-69
B. A. C. 1361	6.0	2.43	7.1	18 50.0	17 13.4	+ 2 20.1	+0.7218	0.5633	0.1448	+90	+10
ϵ Tauri	3.6	2.42	6.9	18 58.7	18 49.0	+ 3 52.3	+0.7982	0.5634	0.1416	+90	+15
B. A. C. 1417	6.4	2.40	6.4	19 41.7	21 53.7	+ 6 50.4	+0.4790	0.5636	0.1354	+71	- 2
B.D.+20°, 785	5.8	+2.40	+ 6.0	+20 30.1	22 59.6	+ 7 54.0	-0.2182	0.5637	+0.1331	+28	-39
ι Tauri	4.7	2.32	4.6	21 27.6	13 9 45.2	- 5 43.4	+0.0872	0.5640	0.1104	+45	-20
B.D.+21°, 755	6.3	2.32	4.4	21 9.0	10 18.6	- 5 11.2	+0.4747	0.5640	0.1092	+71	0
105 Tauri	6.0	2.32	4.1	21 35.1	11 50.9	- 3 42.3	+0.1829	0.5640	0.1059	+51	-15
108 Tauri	6.2	2.30	3.5	22 10.9	15 6.4	- 0 33.7	-0.1130	0.5639	0.0988	+33	-30
η Tauri	5.1	+2.28	+ 3.3	+22 0.2	16 45.9	+ 1 2.3	+0.2363	0.5639	+0.0951	+54	-12
θ Tauri	4.8	2.24	3.0	21 51.6	20 23.7	+ 4 32.6	+0.7197	0.5637	0.0871	+90	+16
121 Tauri	5.1	2.24	1.9	23 58.8	23 45.0	+ 7 46.4	-1.2509	0.5633	0.0796	-50	-66
Piazz v, 184	6.5	2.19	2.0	22 36.9	14 2 39.0	+10 34.3	+0.4200	0.5633	0.0731	+67	+ 1
Piazz v, 192	6.0	2.20	1.7	23 9.7	3 11.2	+11 5.3	-0.1222	0.5632	0.0718	+33	-28
B.D.+24°, 1033	5.8	+2.15	+ 0.7	+24 14.2	9 5.4	- 7 13.0	-0.8860	0.5626	+0.0585	-13	-66
141 Tauri	6.3	2.10	1.1	22 24.0	11 11.9	- 5 11.1	+1.1968	0.5622	0.0537	+90	+54
1 Geminorum	4.1	2.10	0.6	23 16.1	12 14.4	- 4 10.8	+0.3215	0.5621	0.0513	+60	- 2
3 Geminorum	5.6	2.07	+ 0.4	23 7.8	14 41.7	- 1 48.7	+0.5910	0.5617	0.0457	+83	+13
5 Geminorum	5.9	2.09	- 0.2	24 26.5	15 27.5	- 1 4.5	-0.7811	0.5616	0.0440	- 6	-66
6 Geminorum	6.3	+2.06	+ 0.4	+22 55.8	15 49.7	- 0 43.1	+0.8555	0.5615	+0.0432	+90	+28
8 Geminorum	6.1	2.05	- 0.2	24 0.0	17 33.4	+ 0 57.0	-0.2214	0.5612	0.0392	+28	-30
9 Geminorum	6.2	2.05	0.2	23 46.4	17 51.0	+ 1 13.9	+0.0344	0.5612	0.0385	+42	-16
B. A. C. 2064	6.0	2.00	0.5	23 22.7	21 36.9	+ 4 51.9	+0.5875	0.5604	0.0300	+83	+14
Piazz vi, 165	6.5	1.96	1.4	24 40.0	15 2 49.6	+ 9 53.6	-0.6758	0.5593	0.0181	+ 1	-60
ϵ Geminorum	3.2	+1.93	- 1.9	+25 13.3	5 40.5	-11 21.6	-1.2340	0.5586	+0.0117	-49	-65
B. A. C. 2238	5.8	1.86	1.8	23 42.6	9 16.5	- 7 53.1	+0.4278	0.5576	+0.0036	+68	+ 8
ω Geminorum	5.2	1.82	2.5	24 20.8	13 53.4	- 3 25.8	-0.2685	0.5562	-0.0067	+25	-30
48 Geminorum	5.8	1.76	2.9	24 16.9	18 22.2	+ 0 53.6	-0.2516	0.5548	0.0166	+25	-30
52 Geminorum	6.1	1.76	3.3	25 2.7	19 21.9	+ 1 51.3	-1.0982	0.5545	0.0188	-30	-65
58 Geminorum	6.0	+1.68	- 3.0	+23 7.3	23 20.8	+ 5 41.9	+0.9022	0.5531	-0.0275	+90	+33

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	y'	x'	y'	N.	S.
		Δα	Δδ								
		s	"	°	d h m	h m				°	°
B. D.+23°, 1744	6.4	+1.63	-3.3	+23 5.0	16 3 35.0	+ 9 47.4	+0.8104	0.5516	-0.0366	+90	+26
Mayer 319	6.3	1.62	4.0	24 34.0	6 0.3	-11 52.2	-0.9036	0.5506	0.0417	-14	-65
B. A. C. 2514	6.0	1.61	4.1	24 25.8	6 26.8	-11 26.6	-0.7743	0.5504	0.0426	-5	-66
B.D.+23°, 1780	6.3	1.60	3.6	23 13.9	7 16.5	-10 38.6	+0.5004	0.5501	0.0444	+74	+8
B. A. C. 2544	6.3	1.56	3.5	22 37.0	8 22.7	-9 34.6	+1.1231	0.5497	0.0467	+90	+47
κ Geminorum	3.6	+1.58	-4.3	+24 37.1	8 50.1	-9 8.1	-1.0878	0.5494	-0.0476	-29	-65
82 Geminorum	6.3	1.55	4.0	23 22.1	10 44.2	-7 17.9	+0.1849	0.5488	0.0516	+52	-9
B. D.+23°, 1866	6.4	1.48	4.6	23 50.1	16 27.4	-1 46.2	-0.6561	0.5465	0.0633	+2	-62
μ ¹ Cancri	6.2	1.44	4.4	22 53.8	18 55.2	+0 36.6	+0.2106	0.5454	0.0683	+53	-9
B. D.+23°, 1913	6.4	1.40	4.9	23 24.8	22 20.9	+3 55.5	-0.6024	0.5440	0.0751	+6	-59
γ Cancri	4.9	+1.21	-5.2	+21 47.9	17 12 20.2	-6 32.6	-0.0618	0.5377	-0.1014	+36	-28
B. D.+19°, 2251	6.5	0.86	5.6	19 17.1	18 18 21.2	-1 28.1	-1.0875	0.5245	0.1502	-26	-71
B. D.+16°, 2077	6.3	0.74	4.8	16 12.3	19 5 7.8	+8 59.0	+0.6287	0.5202	0.1649	+85	+1
η Leonis	3.6	0.73	5.2	17 12.6	5 57.5	+9 47.3	-0.6237	0.5199	0.1660	+6	-69
42 Leonis	6.1	0.66	4.8	15 26.3	13 26.6	-6 57.0	+0.0634	0.5173	0.1752	+43	-30
i Leonis	5.8	+0.60	-4.6	+14 36.5	18 49.8	-1 43.3	+0.0226	0.5155	-0.1814	+41	-33
ε Leonis	4.1	0.39	3.9	11 2.1	20 22 13.0	+0 52.5	-1.3640	0.5088	0.2073	-58	-79
ω Virginis	5.4	0.33	3.3	8 38.6	21 6 2.6	+8 28.9	-0.3647	0.5077	0.2128	+21	-59
ξ Virginis	4.8	0.32	3.4	8 46.1	9 43.0	-11 56.9	-1.2895	0.5073	0.2152	-42	-81
ν Virginis	4.2	0.31	3.1	7 2.6	10 2.0	-11 38.5	+0.5443	0.5073	0.2153	+75	-10
π Virginis	4.6	+0.26	-3.0	+7 7.6	18 8.4	-3 45.8	-1.3104	0.5069	-0.2198	-44	-83
B. D.+6°, 2543	6.5	0.25	2.8	6 4.3	19 42.0	-2 14.8	-0.4922	0.5068	0.2206	+14	-69
ε Virginis	5.1	0.20	2.4	+3 49.5	22 4 41.2	+6 29.1	-0.0211	0.5070	0.2243	+39	-41
NEW MOON.											
θ Librae	4.4	+0.28	-0.6	-16 27.6	28 16 53.3	-8 33.8	-1.1462	0.5503	-0.1679	-37	-90
β ¹ Scorpii	2.9	0.31	1.1	19 33.3	22 7.8	-3 30.0	+1.2677	0.5536	0.1597	+70	+46
β ² Scorpii	5.0	0.31	1.1	19 33.0	22 8.0	-3 29.8	+1.2632	0.5537	0.1597	+70	+46
B. D.-17°, 4502	6.4	0.31	0.8	18 5.8	27 0 10.8	-1 31.2	-0.5962	0.5549	0.1563	-2	-82
γ ² Scorpii	3.9	0.33	1.0	19 13.4	1 5.5	-0 38.4	+0.4507	0.5555	0.1548	+55	-15
B. A. C. 5408	6.4	+0.33	-0.9	-18 18.0	2 18.1	+0 31.8	-0.7087	0.5563	-0.1527	-8	-90
B. A. C. 5436	6.2	0.35	1.1	19 59.6	4 16.2	+2 25.8	+0.7808	0.5575	0.1493	+70	+4
ψ Ophiuchi	4.6	0.37	1.0	19 49.4	6 29.1	+4 34.1	+0.2733	0.5590	0.1454	+43	-25
ω Ophiuchi	4.5	0.40	1.2	21 16.2	10 0.4	+7 57.9	+1.2955	0.5612	0.1390	+69	+55
B. A. C. 5567	6.5	0.43	0.9	20 13.8	13 43.2	+11 32.9	-0.3023	0.5635	0.1319	+11	-59
Bradley 2115	5.5	+0.43	-0.8	-19 44.9	14 18.2	-11 53.4	-0.8841	0.5638	-0.1308	-22	-90
Mayer 679	5.9	0.47	0.8	20 15.7	19 17.4	-7 4.8	-0.9711	0.5669	0.1209	-28	-90
Bradley 2162	6.3	0.53	0.9	21 26.3	28 0 44.5	-1 49.5	-0.3664	0.5701	0.1095	+5	-63
B. A. C. 5866	5.9	0.60	0.6	21 21.4	8 33.8	+5 42.6	-1.2391	0.5743	0.0923	-56	-90
α ² Ophiuchi	4.8	0.65	1.2	23 53.5	11 15.7	+8 22.4	+1.1602	0.5757	0.0860	+66	+36
52 Ophiuchi	6.4	+0.65	-0.6	-21 58.9	12 59.1	+9 58.0	-0.9705	0.5765	-0.0822	-32	-90
4 Sagittarii	4.8	0.78	0.8	23 48.5	23 3.5	-4 20.3	+0.2235	0.5810	0.0580	+32	-27
B. A. C. 6088	5.7	0.78	0.3	22 46.7	23 56.5	-3 29.3	-0.8963	0.5813	0.0559	-30	-90
7 Sagittarii	5.5	0.79	0.7	24 16.9	29 0 18.1	-3 8.6	+0.6451	0.5815	0.0550	+60	-3
9 Sagittarii	6.0	0.80	0.7	24 21.8	0 43.1	-2 44.5	+0.7065	0.5816	0.0539	+65	0
Bradley 2276	5.2	+0.83	-0.4	-23 43.2	3 55.8	+0 20.8	-0.1211	0.5828	-0.0459	+12	-47
Lalande 33732	6.4	0.89	0.5	24 57.4	7 53.3	+4 9.2	+0.9978	0.5842	0.0359	+65	+21
24 Sagittarii	5.7	0.94	-0.1	24 6.1	12 54.1	+8 58.4	-0.9365	0.5856	0.0231	+14	-42
Bradley 2335	5.8	0.96	+0.2	23 35.0	14 46.2	+10 46.2	-0.6099	0.5860	0.0182	-16	-86
26 Sagittarii	6.1	0.98	+0.2	23 55.2	16 6.6	-11 56.6	-0.2850	0.5863	0.0147	0	-58
Piazzixviii, 155	5.7	+1.00	-0.2	-25 6.2	17 17.0	-10 48.9	+0.9225	0.5866	-0.0117	+65	+15
Piazzixviii, 225	5.9	1.05	+0.7	23 17.5	21 48.0	-6 28.4	-0.9738	0.5874	+0.0002	-40	-90
B. A. C. 6465	6.4	1.08	0.2	25 0.0	22 42.2	-5 36.3	+0.7887	0.5875	0.0025	+65	+6
B. A. C. 6479	6.4	1.09	0.3	25 4.2	23 31.8	-4 48.6	+0.8642	0.5876	0.0047	+65	+11
B. A. C. 6490	5.8	+1.09	+0.2	24 58.4	30 0 21.4	-4 1.0	+0.7694	0.5877	0.0009	+65	+5
URANUS				-23 10.1	1 14.1	-3 10.4	-1.0836	0.5866	+0.0090	-47	-90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	γ	γ'	γ''	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m				"	"
Mayer 787	6.1	+1.13	+ 0.5	-24 48.1	30 2 40.1	- 1 47.7	+0.6139	0.5880	+0.0130	+55	- 5
Lalande 35745	6.5	1.12	1.0	23 20.1	2 53.5	- 1 34.8	-0.8918	0.5880	0.0136	-33	-90
B. A. C. 6576	6.1	1.17	0.8	24 20.2	5 35.5	+ 1 0.8	+0.1842	0.5882	0.0206	+27	-29
1 st Sagittarii	4.9	1.21	1.0	24 41.2	9 28.2	+ 4 44.5	+0.6446	0.5883	0.0309	+59	- 3
1 st Sagittarii	5.5	1.21	1.2	24 8.6	9 34.1	+ 4 50.2	+0.0882	0.5884	0.0312	+22	-35
4 th Sagittarii	5.8	+1.28	+ 1.2	-24 55.2	13 45.6	+ 8 51.8	+1.0394	0.5883	+0.0422	+65	+25
4 th Sagittarii	4.7	1.28	1.2	25 5.2	14 1.5	+ 9 7.1	+1.2212	0.5883	0.0428	+65	+46
53 Sagittarii	6.3	1.29	1.7	23 38.2	15 17.7	+10 20.3	-0.2092	0.5883	0.0462	+ 7	-53
Bradley 2488	6.1	1.30	1.8	23 38.4	15 24.7	+10 27.0	-0.2010	0.5883	0.0465	+ 8	-52
B. A. C. 6814	6.3	1.36	1.7	24 10.2	21 4.4	- 8 6.5	+0.6467	0.5878	0.0612	+61	- 3
B. A. C. 6864	6.1	+1.39	+ 2.6	-22 59.4	23 55.6	- 5 22.1	-0.3756	0.5874	+0.0685	+ 1	-64
B. A. C. 6878	6.5	1.40	2.8	22 51.2	31 0 52.0	- 4 27.8	-0.4496	0.5873	0.0709	- 3	-70
4 Capricorni	5.7	1.47	3.4	22 5.6	6 36.2	+ 1 3.1	-0.7757	0.5863	0.0854	-20	-90
Piazzì xx, 146	6.2	1.54	3.5	22 41.8	11 13.5	+ 5 29.5	+0.2604	0.5853	0.0969	+38	-25
17 Capricorni	5.8	+1.62	+ 4.4	-21 50.9	17 58.1	+11 58.6	+0.1045	0.5835	+0.1131	+30	-34

NOVEMBER.

4 Capricorni	4.8	+1.70	+ 5.5	-20 13.1	1 1 25.3	- 4 51.4	-0.6437	0.5811	+0.1303	- 8	-88
1 Capricorni	5.3	1.73	5.1	21 33.7	3 6.3	- 3 14.2	+0.9434	0.5806	0.1340	+68	+15
27 Capricorni	6.1	+1.74	+ 5.4	-20 55.5	3 30.8	- 2 50.6	+0.3514	0.5804	+0.1350	+47	-21
o Capricorni	5.3	1.76	5.6	21 1.9	6 1.0	- 0 26.1	+0.8047	0.5795	0.1404	+69	+ 6
B. A. C. 7463	6.5	1.82	6.5	19 32.9	11 57.8	+ 5 17.2	+0.1726	0.5774	0.1530	+39	-30
1 Capricorni	4.7	1.86	6.6	19 52.6	14 54.3	+ 8 7.0	+0.9644	0.5762	0.1590	+70	+16
8 Capricorni	4.8	1.89	7.0	19 17.0	17 13.9	+10 21.4	+0.7396	0.5753	0.1636	+70	+ 1
B.D. -17°, 6389	6.5	+1.90	+ 7.9	-17 16.3	20 25.2	-10 34.3	-0.7625	0.5740	+0.1698	-10	-90
B.D. -19°, 6176	6.1	1.92	7.4	19 3.0	21 1.2	- 9 59.7	+1.1357	0.5737	0.1709	+71	+30
B. A. C. 7665	6.4	1.97	7.8	18 20.6	2 1 27.1	- 5 43.6	+1.1968	0.5720	0.1790	+72	+36
29 Aquarii	6.5	1.96	8.3	17 24.3	1 34.0	- 5 36.8	+0.2711	0.5719	0.1794	+47	-25
56 Aquarii	6.1	2.07	9.8	15 3.2	13 27.4	+ 5 50.5	+0.1506	0.5671	0.1990	+42	-32
71 Aquarii	5.6	+2.14	+10.4	-14 32.3	20 59.5	-10 53.7	+1.1731	0.5642	+0.2099	+75	+31
72 Aquarii	4.4	2.14	10.6	14 4.5	21 48.7	-10 6.2	+0.8798	0.5640	0.2110	+76	+ 9
74 Aquarii	5.8	2.15	11.3	12 6.2	23 30.8	- 8 27.7	+0.7432	0.5633	0.2132	- 4	-90
B. A. C. 8004	6.3	2.18	11.0	13 33.6	3 2 10.7	- 5 53.5	+1.2953	0.5623	0.2166	+76	+44
B.D. -11°, 6032	6.3	2.23	12.0	11 11.1	8 48.7	+ 0 30.4	+0.3709	0.5601	0.2243	+58	-20
4 th Aquarii	4.5	+2.25	+12.5	- 9 35.1	9 20.3	+ 1 0.9	-1.1173	0.5599	+0.2249	-28	-90
4 th Aquarii	4.6	2.23	12.5	9 40.9	10 14.5	+ 1 53.2	-0.8175	0.5596	0.2259	- 7	-90
4 th Aquarii	5.2	2.24	12.4	10 6.6	10 42.5	+ 2 20.3	-0.2812	0.5595	0.2263	+22	-56
B.D. -10°, 6120	6.3	2.28	12.7	9 46.1	15 10.0	+ 6 38.4	+0.3949	0.5582	0.2307	+61	-19
B. A. C. 8214	6.5	2.30	13.3	7 58.2	18 4.2	+ 9 26.6	-0.7366	0.5573	0.2333	- 1	-90
Mayer 1012	6.3	+2.34	+13.7	- 6 53.3	23 53.0	- 8 56.8	-0.4524	0.5559	+0.2379	+15	-68
30 Piscium	4.7	2.39	13.9	6 31.3	1 5 54.6	- 3 7.5	+0.6264	0.5546	0.2419	+79	- 7
33 Piscium	4.7	2.40	14.1	6 13.1	7 26.0	- 1 39.3	+0.6913	0.5543	0.2427	+83	- 3
Piazzì o, 1	6.0	2.42	14.2	5 45.3	9 40.6	+ 0 30.8	+0.7730	0.5539	0.2439	+77	+ 1
B. A. C. 81	6.3	2.46	14.9	2 43.4	16 5.4	+ 6 42.4	-0.6958	0.5529	0.2465	+ 3	-89
14 Ceti	5.4	+2.50	+15.3	- 1 0.4	21 5.6	+11 32.4	-1.1828	0.5524	+0.2478	-30	-90
26 Ceti	6.0	2.59	15.4	+ 0 52.7	5 9 56.7	- 0 2.7	+0.1168	0.5517	0.2484	+47	-34
33 Ceti	6.1	2.60	15.6	1 57.6	13 0.9	+ 2 55.2	-0.2092	0.5518	0.2480	+29	-52
/ Piscium	5.1	2.62	15.6	3 8.1	16 18.4	+ 6 6.1	-0.5749	0.5519	0.2473	+10	-76
Lalande 2632	6.5	2.66	15.5	3 3.8	20 26.5	+10 5.8	+0.5173	0.5521	0.2460	+73	-12
1 Piscium	4.6	+2.70	+15.4	+ 5 1.6	6 3 2.2	- 7 32.0	+0.1525	0.5527	+0.2431	+49	-31
Piazzì i, 249	6.5	2.77	15.0	7 17.9	13 37.3	+ 2 41.5	+0.3988	0.5541	0.2362	+64	-18
64 Ceti	5.8	2.80	14.8	8 8.6	16 33.4	+ 5 31.6	+0.2342	0.5546	0.2339	+54	-26
21 Ceti	4.5	2.79	14.9	8 25.2	17 17.5	+ 6 14.1	+0.1267	0.5547	0.2333	+47	-31
2 Arietis	5.5	2.83	14.5	10 11.9	22 35.3	+11 21.1	-0.4524	0.5557	0.2284	+16	-64
25 Arietis	6.5	+2.82	+14.3	+ 9 47.7	23 45.7	-11 30.9	+0.2244	0.5559	+0.2272	+53	-25

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.												
NOVEMBER.												
THE STAR'S					AT CONJUNCTION IN R. A.					Limiting		
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, //	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.	
		$\Delta\alpha$	$\Delta\delta$		d h m	h m						
B. F. 310	6.3	+2.83	+14.3	+ 9 9.6	7 0 44.5	-10 34.1	+1.0910	0.5562	+0.2262	+90	+25	
31 Arietis	5.7	2.89	14.1	12 3.2	3 51.2	- 7 33.9	-1.1482	0.5568	0.2229	-28	-78	
85 Ceti	6.3	2.86	13.9	10 21.2	6 29.9	- 5 0.6	+1.1644	0.5574	0.2199	+90	+32	
38 Arietis	5.2	2.89	13.8	12 3.8	7 34.7	- 3 58.1	-0.3368	0.5576	0.2186	+22	-55	
W. B. ii, 1033	5.8	2.92	12.8	12 50.2	17 5.7	+ 5 13.1	+0.8999	0.5599	0.2064	+90	+14	
Mayer 121	6.4	+2.97	+11.2	+15 7.9	8 6 52.3	- 5 29.4	+1.2583	0.5632	+0.1853	+90	+47	
Piazzii iii, 103	6.3	2.99	11.0	16 14.5	7 34.2	- 4 49.0	+0.2477	0.5634	0.1841	+55	-20	
Mayer 136	5.9	3.01	10.1	17 3.4	13 32.3	+ 0 56.4	+0.4777	0.5647	0.1737	+71	- 6	
B. A. C. 1239	6.3	3.00	9.7	17 2.4	16 46.6	+ 4 3.9	+1.0492	0.5654	0.1678	+90	+29	
Piazzii iii, 215	5.8	3.03	9.6	17 56.3	16 50.6	+ 4 7.7	+0.1336	0.5654	0.1677	+48	-23	
ω^1 Tauri	5.5	+3.03	+ 8.9	+19 22.1	20 26.3	+ 7 35.7	-0.7554	0.5662	+0.1609	- 2	-67	
ω^2 Tauri	4.8	3.06	8.3	20 21.3	23 55.4	+10 57.3	-1.2290	0.5668	0.1542	-41	-70	
B.D.+18°, 624	6.0	3.03	8.3	18 31.5	9 1 18.3	-11 42.7	+0.8792	0.5671	0.1515	+90	+19	
Piazzii iv, 53	6.1	3.06	8.0	20 36.4	2 7.3	-10 55.5	-1.1569	0.5673	0.1499	-32	-69	
B.D.+20°, 751	5.9	3.06	7.9	20 46.2	2 37.1	-10 26.8	-1.2530	0.5674	0.1488	-45	-69	
B. A. C. 1361	6.0	+3.03	+ 8.0	+18 50.0	3 15.2	- 9 50.0	+0.8519	0.5673	+0.1476	+90	+18	
ϵ Tauri	3.6	3.03	7.7	18 58.7	4 49.6	- 8 19.0	+0.9307	0.5677	0.1444	+90	+23	
B. A. C. 1417	6.4	3.03	7.2	19 41.7	7 51.9	- 5 23.3	+0.6175	0.5682	0.1382	+85	+ 5	
B. D.+20°, 785	5.8	3.05	6.9	20 30.1	8 56.9	- 4 20.6	-0.0749	0.5684	0.1359	+36	-31	
ϵ Tauri	4.7	3.02	5.2	21 27.6	19 33.0	+ 5 52.5	+0.2454	0.5695	0.1130	+55	-12	
B.D.+21°, 755	6.3	+3.02	+ 5.0	+21 9.0	20 5.8	+ 6 24.1	+0.6317	0.5695	+0.1118	+87	+ 9	
105 Tauri	6.0	3.03	4.7	21 35.1	21 36.6	+ 7 51.7	+0.3436	0.5696	0.1084	+62	- 7	
108 Tauri	6.2	3.02	4.1	22 10.9	10 49.0	+10 56.9	+0.0541	0.5698	0.1012	+43	-21	
η Tauri	5.1	3.01	3.8	22 0.2	2 26.6	-11 29.0	+0.4035	0.5698	0.0975	+66	- 2	
ν Tauri	4.8	2.99	3.4	21 51.6	6 0.6	- 8 2.8	+0.8886	0.5698	0.0894	+90	+26	
121 Tauri	5.1	+3.02	+ 2.3	+23 58.8	9 18.2	- 4 52.4	-1.0652	0.5698	+0.0818	-26	-66	
Piazzii v, 184	6.5	2.97	2.2	22 36.9	12 8.8	- 2 8.0	+0.5984	0.5696	0.0751	+84	+10	
Piazzii v, 192	6.0	2.98	1.9	23 9.7	12 40.4	- 1 37.5	+0.0605	0.5696	0.0739	+44	-18	
132 Tauri	5.0	2.99	1.2	24 32.3	15 4.6	+ 0 41.5	-1.2256	0.5694	0.0683	-45	-65	
B.D.+24°, 1033	5.8	2.96	0.7	24 14.2	18 27.8	+ 3 57.2	-0.6911	0.5691	0.0603	0	-64	
1 Geminorum	4.1	+2.92	+ 0.4	+23 16.1	21 33.0	+ 6 55.7	+0.5114	0.5687	+0.0530	+75	+ 8	
3 Geminorum	5.6	2.90	+ 0.1	23 7.7	23 57.3	+ 9 14.8	+0.7814	0.5683	0.0473	+90	+23	
5 Geminorum	5.9	2.92	- 0.4	24 26.5	11 42.2	+ 9 58.2	-0.5799	0.5682	0.0455	+ 7	-54	
6 Geminorum	6.3	2.88	0.0	22 55.8	1 4.0	+10 19.2	-1.0452	0.5681	0.0446	+90	+41	
8 Geminorum	6.1	2.89	0.6	24 0.0	2 45.6	+11 57.2	-0.0221	0.5678	0.0406	+39	-19	
9 Geminorum	6.2	+2.89	- 0.6	+23 46.3	3 2.8	-11 46.3	+0.2321	0.5677	+0.0400	+54	- 6	
B. A. C. 2064	6.0	2.85	1.1	23 22.7	6 44.1	- 8 13.0	+0.7848	0.5670	0.0312	+90	+25	
Piazzii vi, 165	6.5	2.83	2.2	24 40.0	11 50.5	- 3 17.7	-0.4644	0.5657	0.0192	+14	-44	
ι Geminorum	3.2	2.81	2.8	25 13.3	14 37.9	- 0 36.2	-1.0161	0.5650	0.0126	-23	-65	
B. A. C. 2238	5.8	2.75	3.0	23 42.6	18 9.5	+ 2 47.9	+0.6365	0.5639	+0.0043	+89	+19	
ω Geminorum	5.2	+2.71	- 3.8	+24 20.8	22 40.9	+ 7 9.5	-0.0511	0.5624	-0.0062	-37	-18	
48 Geminorum	5.8	2.67	4.5	24 16.9	12 3.4	+11 23.7	-0.0311	0.5608	0.0162	+38	-15	
52 Geminorum	6.1	2.68	4.9	25 2.6	4 2.9	-11 39.8	-0.8709	0.5604	0.0185	-12	-65	
A Geminorum	5.1	2.63	5.4	25 13.6	7 55.2	- 7 55.7	-1.1582	0.5589	0.0272	-37	-65	
58 Geminorum	6.0	2.59	4.9	23 7.3	7 57.1	- 7 53.9	+1.1177	0.5589	0.0273	+90	+48	
B.D.+23°, 1744	6.4	+2.54	- 5.4	+23 5.0	12 6.6	- 3 53.1	+1.0289	0.5571	-0.0365	+90	+41	
Mayer 319	6.3	2.54	6.1	24 33.9	14 29.2	- 1 35.4	-0.6716	0.5560	0.0417	+ 2	61	
B. A. C. 2514	6.0	2.54	6.2	24 25.8	14 55.2	- 1 10.3	-0.5429	0.5558	0.0427	+ 9	-51	
B.D.+23°, 1780	6.3	2.51	5.9	23 13.8	15 44.1	- 0 23.1	+0.7236	0.5554	0.0444	+90	+20	
κ Geminorum	3.6	2.51	6.6	24 37.0	17 16.0	+ 1 5.6	-0.8531	0.5547	0.0478	-11	-65	
82 Geminorum	6.3	+2.46	- 6.4	+23 22.0	19 8.0	+ 2 53.7	+0.4118	0.5539	-0.0518	+67	+ 2	
B. D.+23°, 1866	6.4	2.41	7.3	23 50.1	13 0 45.4	+ 8 19.5	-0.4210	0.5511	0.0636	-16	-45	
μ^1 Cancri	6.2	2.36	7.2	22 53.8	3 10.8	+10 40.0	+0.4410	0.5499	0.0687	+69	+ 2	
B. D.+23°, 1913	6.4	2.33	7.8	23 24.8	6 33.3	10 4.3	-0.3657	0.5481	0.0755	+20	-42	
γ Cancri	4.9	2.12	8.7	21 47.8	20 20.9	+ 3 15.8	+0.1749	0.5408	0.1021	+51	-15	
B.D.+19°, 2251	6.5	+1.72	-10.2	+19 17.0	15 2 6.3	+ 8 4.7	-0.8497	0.5249	-0.1508	- 5	-71	

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	y'	x'	y'	N.	S.		
		$\Delta\alpha$	$\Delta\delta$										
B. D. +16°, 2077	6.3	+1.57	-9.6	+16 12.2	15 12 50.4	-5 30.7	+0.8576	0.5197	-0.1654	+90	+15		
η Leonis	3.6	1.56	10.0	17 12.5	13 40.0	-4 42.6	-0.3922	0.5194	0.1665	+19	-54		
42 Leonis	6.1	1.47	9.7	15 26.2	21 8.5	+2 32.6	+0.2894	0.5161	0.1756	+57	-18		
ι Leonis	5.8	1.40	9.6	14 36.4	16 2 31.7	+7 46.3	+0.2452	0.5140	0.1818	+54	-21		
κ Leonis	5.5	1.31	9.9	14 40.7	9 59.4	-8 59.1	-1.2196	0.5113	0.1897	-36	-75		
λ Leonis	4.1	+1.10	-9.1	+11 2.0	17 5 59.3	+10 26.6	-1.1651	0.5061	-0.2073	-29	-79		
ω Virginis	5.4	1.01	8.3	8 38.5	13 51.1	-5 54.9	-0.1752	0.5048	0.2129	+31	-48		
ξ Virginis	4.8	0.98	8.4	8 46.0	17 32.8	-2 19.5	-1.1043	0.5044	0.2152	-23	-81		
ν Virginis	4.2	0.97	8.0	7 26	17 51.8	-2 1.0	+0.7286	0.5043	0.2154	+90	0		
π Virginis	4.6	0.90	8.0	7 7.5	18 2 0.9	+5 54.3	-1.1364	0.5038	0.2199	-26	-83		
B. D. +6°, 2543	6.5	+0.88	-7.7	+6 4.2	3 35.0	+7 25.8	-0.3205	0.5038	-0.2207	+23	-58		
η Virginis	5.6	0.84	7.7	6 19.0	7 1.1	+10 46.2	-1.3516	0.5038	0.2223	-50	-84		
ϵ Virginis	5.1	0.79	7.0	3 49.4	12 37.1	-7 47.2	+0.1373	0.5040	0.2245	+48	-32		
Piazzii xii, 142	5.9	0.73	6.5	+2 21.6	22 23.1	+1 42.4	-0.4659	0.5050	0.2274	+16	-69		
80 Virginis	5.6	0.55	4.3	-4 55.7	20 4 53.3	+7 20.6	+0.4879	0.5133	0.2279	+69	-15		
Piazzii xiii, 174	6.4	+0.52	-4.3	-5 2.2	9 16.6	+11 36.2	-0.3931	0.5152	-0.2267	+19	-64		
η Virginis	6.5	0.52	4.0	6 22.8	11 33.1	-10 11.3	+0.5412	0.5162	0.2261	+73	-12		
Bradley 1820	6.1	0.50	3.8	7 36.4	15 0.2	-6 50.3	+1.0858	0.5178	0.2248	+82	+22		
Piazzii xiii, 287	6.5	0.49	3.4	8 49.0	19 48.6	-2 10.4	+1.3091	0.5202	0.2228	+81	+44		
95 Virginis	5.4	0.48	3.4	8 52.5	21 1.1	-1 0.1	+1.1039	0.5208	0.2222	+81	+23		
NEW MOON.													
4 Sagittarii	4.8	+0.62	-0.4	-23 48.5	25 5 26.9	+3 50.5	+0.1191	0.5883	-0.0599	+26	-33		
B. A. C. 6088	5.7	0.62	0.1	22 46.7	6 18.7	+4 40.3	-0.9916	0.5887	0.0577	-36	-90		
7 Sagittarii	5.5	0.63	0.3	24 16.9	6 39.9	+5 0.7	+0.5356	0.5888	0.0568	+52	-10		
9 Sagittarii	6.0	+0.63	-0.3	-24 21.8	7 4.3	+5 24.2	+0.5961	0.5890	-0.0558	+56	-6		
Bradley 2276	5.2	0.66	0.1	23 43.2	10 12.8	+8 25.3	-0.2275	0.5901	0.0476	+7	-54		
Lalande 33732	6.4	0.69	-0.2	24 57.4	14 5.2	-11 51.5	+0.8779	0.5914	0.0375	+65	+12		
24 Sagittarii	5.7	0.72	+0.2	24 6.1	18 59.6	-7 8.7	-0.1525	0.5927	0.0244	+9	-49		
Bradley 2335	5.8	0.74	0.4	23 35.0	20 49.4	-5 23.2	-0.7231	0.5930	0.0194	-23	-90		
26 Sagittarii	6.1	+0.75	+0.4	-23 55.2	22 8.2	-4 7.6	-0.4021	0.5933	-0.0159	-5	-66		
Piazzii xviii, 155	5.7	0.76	0.1	25 6.2	23 17.1	+3 1.4	+0.7949	0.5934	0.0128	+65	+6		
Piazzii xviii, 225	5.9	0.79	0.7	23 17.5	28 3 42.7	+1 13.7	-1.0908	0.5940	-0.0008	-49	-90		
B. A. C. 6465	6.4	0.81	0.4	25 0.0	4 35.9	+2 4.9	+0.6579	0.5941	+0.0017	+58	-2		
B. A. C. 6479	6.4	0.82	0.4	25 4.2	5 24.6	+2 51.6	+0.7322	0.5942	0.0039	+65	+2		
B. A. C. 6490	5.8	+0.83	+0.3	-24 58.4	6 13.1	+3 38.2	+0.6375	0.5943	+0.0061	+56	-4		
Mayer 787	6.1	0.85	0.6	24 48.1	8 29.2	+5 48.9	+0.4813	0.5943	0.0122	+44	-13		
Lalande 35745	6.5	0.84	0.9	23 20.1	8 42.4	+6 1.5	-1.0141	0.5943	0.0129	-42	-90		
ψ Sagittarii	4.8	0.89	0.6	25 24.9	11 20.3	+8 33.2	+1.1547	0.5943	0.0200	+65	+36		
B. A. C. 6576	6.1	0.88	0.8	24 20.2	11 21.5	+8 34.3	+0.0524	0.5943	0.0201	+19	-37		
γ^1 Sagittarii	4.9	+0.92	+0.9	-24 41.2	15 10.1	-11 46.2	+0.5071	0.5942	+0.0305	+47	-11		
χ^1 Sagittarii	5.5	0.91	1.1	24 8.6	15 16.0	-11 40.5	-0.0460	0.5942	0.0207	+15	-43		
κ^1 Sagittarii	5.8	0.96	1.1	24 55.2	19 23.2	-7 43.2	+0.8970	0.5938	0.0419	+65	+13		
κ^2 Sagittarii	4.7	0.96	1.0	25 5.2	19 38.9	-7 28.1	+1.0776	0.5938	0.0425	+65	+28		
53 Sagittarii	6.3	0.96	1.4	23 38.2	20 54.0	-6 16.0	-0.3457	0.5937	0.0459	0	-62		
Bradley 2488	6.1	+0.97	+1.4	-23 38.4	21 0.9	-6 9.3	-0.3377	0.5936	+0.0462	+1	-62		
B. A. C. 6814	6.3	1.02	1.2	24 10.2	27 2 35.6	-0 48.0	+0.5022	0.5926	0.0611	+49	-12		
B. A. C. 6864	6.1	1.06	2.1	22 59.4	5 24.5	+1 54.2	-0.5171	0.5919	0.0685	-7	-76		
B. A. C. 6878	6.5	1.06	2.2	22 51.2	6 20.2	+2 47.7	-0.5914	0.5917	0.0709	-11	-83		
4 Capricorni	5.7	1.12	2.7	22 5.6	12 0.5	+8 14.7	-0.9200	0.5900	0.0855	-29	-90		
Piazzii xx, 146	6.2	+1.19	+2.8	-22 41.8	16 35.1	-11 21.5	+0.1107	0.5884	+0.0970	+29	-34		
17 Capricorni	5.8	1.25	3.4	21 50.9	23 16.6	-4 55.7	-0.0477	0.5856	0.1132	+22	-43		
η Capricorni	4.8	1.32	4.3	20 13.1	28 6 41.6	+2 12.3	-0.7981	0.5823	0.1303	-17	-90		
γ Capricorni	5.3	1.35	3.9	21 33.8	8 22.4	+3 49.3	+0.7883	0.5815	0.1341	+68	+5		
27 Capricorni	6.1	1.36	4.1	20 55.5	8 46.8	+4 12.7	+0.1963	0.5813	0.1350	+38	-29		
α Capricorni	5.3	+1.38	+4.3	-21 2.0	11 16.7	+6 37.0	+0.6493	0.5800	+0.1404	+66	-4		

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1906.0.		Apparent Declination.	Washington Mean Time.	Hour Angle. H	γ'	γ''	γ'''	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
B. A. C. 7463	6.5	-1.44	+ 5.0	-19 32.9	28 17 13.5	-11 39.8	+0.0157	0.5769	+0.1529	-30	-39
37 Capricorni	5.7	1.47	4.9	20 29.6	19 14.4	- 9 43.3	+1.2864	0.5759	0.1569	-69	-51
Capricorni	4.7	1.48	5.1	19 52.6	20 10.4	- 8 49.5	+0.8089	0.5754	0.1588	-70	- 6
Capricorni	4.8	1.51	5.4	19 17.1	22 30.4	- 6 34.6	+0.5837	0.5741	0.1633	-64	- 8
B.D. -17° 6389	6.5	1.53	6.2	17 16.4	29 1 42.5	- 3 29.7	-0.9228	0.5723	0.1693	-20	-90
B.D. -19° 6176	6.1	-1.54	+ 5.7	-19 3.0	2 18.7	- 2 54.8	+0.9814	0.5720	-0.1705	-71	-17
B. A. C. 7665	6.4	1.60	6.1	18 20.6	6 46.2	- 1 22.8	+1.0435	0.5696	0.1785	-72	-21
29 Aquarii	6.5	1.59	6.5	17 24.4	6 53.2	+ 1 29.6	+0.1141	0.5696	0.1786	-38	-34
56 Aquarii	6.1	1.72	7.8	15 3.2	18 53.6	-10 56.0	-0.0053	0.5631	0.1979	+33	-41
Aquarii	5.6	1.80	8.3	14 32.4	30 2 32.1	- 3 33.7	+1.0269	0.5593	0.2085	-75	-19
Aquarii	4.4	-1.81	+ 8.5	-14 4.6	3 22.1	- 2 45.4	+0.7318	0.5589	-0.2096	-75	0
74 Aquarii	5.8	1.82	9.2	12 6.2	5 58	- 1 5.4	-0.9028	0.5580	0.2117	-14	-90
B. A. C. 8004	6.3	1.86	8.9	13 33.7	7 48.5	+ 1 31.7	+1.1529	0.5567	0.2150	-76	+25
B.D. -11° 6032	6.3	1.92	9.9	11 11.2	14 34.0	+ 8 3.2	+0.2246	0.5538	0.2224	-50	-28
Aquarii	4.5	1.94	10.5	9 35.2	15 6.3	+ 8 34.4	-1.2771	0.5536	0.2229	-43	-90
Aquarii	4.6	+1.93	+10.4	- 9 40.9	16 1.6	+ 9 27.7	-0.9739	0.5532	-0.2239	-17	-90
Aquarii	5.2	1.94	10.3	10 6.7	16 30.1	+ 9 55.3	-0.4326	0.5529	0.2243	+15	-66
B.D. -10° 6120	6.3	+1.99	-10.5	- 9 46.2	21 3.4	- 9 40.7	+0.2528	0.5512	-0.2285	-52	-27

DECEMBER.

B. A. C. 8214	6.5	+2.02	+11.2	- 7 58.2	1 0 1.6	- 6 48.6	-0.8886	0.5501	+0.2310	-10	-90
Mayer 1012	6.3	2.08	11.6	6 53.3	5 58.8	- 1 3.4	-0.5976	0.5481	0.2354	- 7	-80
30 Piscium	4.7	2.15	11.8	6 31.3	12 9.6	+ 4 54.9	+0.4980	0.5464	0.2391	-60	-14
33 Piscium	4.7	2.16	12.0	6 13.1	13 43.5	- 6 25.7	+0.5651	0.5460	0.2399	-75	-10
Piazzii o. 1	6.0	+2.19	+12.1	- 5 45.4	16 1.8	- 8 39.5	+0.6499	0.5454	+0.2410	-82	- 6
B. A. C. 81	6.3	2.26	13.1	2 43.5	22 37.4	- 8 58.1	-0.8306	0.5441	0.2435	- 5	-90
14 Ceti	5.4	2.32	13.6	1 0.4	2 3 46.2	- 3 59.6	-1.3190	0.5434	0.2448	-44	-90
20 Ceti	4.9	2.40	13.2	- 1 38.4	11 57.2	+ 3 55.4	+1.3320	0.5427	0.2456	-88	-46
26 Ceti	6.0	2.46	13.9	+ 0 52.7	17 0.4	+ 8 48.6	+0.0113	0.5425	0.2454	-41	-40
33 Ceti	6.1	+2.49	+14.1	+ 1 57.6	20 10.2	+11 52.1	-0.3154	0.5425	-0.2450	-24	-58
Piscium	5.1	2.53	14.3	3 8.0	23 33.8	- 8 50.9	-0.6818	0.5426	0.2443	- 4	-80
Lalande 2632	6.5	2.57	14.1	3 3.7	3 3 49.4	- 4 43.7	+0.4299	0.5429	0.2431	-6	-17
Piscium	4.6	2.65	14.3	5 1.6	10 37.1	+ 1 50.6	+0.0688	0.5436	0.2404	-44	-30
Piazzii i. 249	6.5	2.78	14.2	7 17.9	21 30.8	-11 37.2	+0.3321	0.5455	0.2339	-60	-21
64 Ceti	5.8	+2.80	+14.1	+ 8 8.6	4 0 31.9	- 8 42.1	+0.1694	0.5462	+0.2316	-50	-29
Ceti	4.5	2.82	14.2	8 25.2	1 17.2	- 7 58.4	+0.0616	0.5463	0.2310	+44	35
Arietis	5.5	2.89	14.1	10 11.9	6 43.7	- 2 42.7	-0.5174	0.5477	0.2264	-13	-60
25 Arietis	6.5	2.87	13.7	9 47.7	7 56.0	- 1 32.8	+0.1692	0.5480	0.2253	-50	-28
B.F. 310	6.3	2.90	13.7	9 9.5	8 56.3	- 0 34.5	+1.0472	0.5483	0.2243	-90	-22
Arietis	5.7	+2.97	+13.9	+12 3.2	12 7.8	+ 2 30.5	-1.2136	0.5492	-0.2211	-34	-78
85 Ceti	6.3	2.96	13.4	10 21.2	14 50.6	+ 5 7.8	+1.1288	0.5500	0.2183	-00	+29
Arietis	5.2	3.00	13.5	12 3.8	15 57.0	+ 6 12.0	-0.3876	0.5503	0.2171	-20	-50
W. B. ii. 1033	5.8	3.08	12.6	12 50.2	5 1 41.4	- 8 23.3	+0.8748	0.5534	0.2053	-00	-13
Mayer 121	6.4	3.22	11.2	15 7.9	15 44.3	+ 5 10.6	+1.2530	0.5583	0.1849	-00	+46
Piazzii iii. 103	6.3	+3.25	+11.2	+16 14.5	16 26.8	+ 5 51.6	+0.2347	0.5585	+0.1838	-54	-20
Mayer 136	5.9	3.31	10.4	17 3.4	22 30.8	+11 42.9	+0.4739	0.5606	0.1737	-71	- 7
B. A. C. 1239	6.3	3.32	9.8	17 2.4	6 1 47.9	- 9 6.9	+1.0533	0.5616	0.1979	-00	-29
Piazzii iii. 215	5.8	3.34	9.9	17 56.3	1 52.0	- 9 3.0	+0.1312	0.5610	0.1678	-45	24
Tauri	5.5	3.39	9.5	19 22.1	5 30.5	- 5 32.2	-0.7593	0.5629	0.1612	- 2	-71
Tauri	4.8	+3.42	+ 8.9	+20 21.3	9 2.2	- 2 7.9	-1.2311	0.5640	-0.1540	-41	-70
B.D. -18° 624	6.0	3.40	8.6	18 31.5	10 26.0	- 0 47.1	+0.8915	0.5643	0.1510	-90	-20
Piazzii iv. 53	6.1	3.44	8.6	20 36.4	11 15.5	+ 0 0.7	-1.1557	0.5640	0.1503	-32	-69
B.D. -20° 751	5.9	3.45	8.5	20 46.2	11 45.0	- 0 29.6	-1.2516	0.5648	0.1404	-44	-60
B. A. C. 1361	6.0	3.42	8.2	18 50.0	12 24.0	+ 1 6.7	+0.8061	0.5651	0.1481	-90	+15
Tauri	3.6	+3.43	- 8.0	-18 58.8	13 50.4	+ 2 38.7	+0.9468	0.5654	-0.1450	-90	+24

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.							Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle. H	Y	x'	y'	N.	S.		
		$\Delta\alpha$	$\Delta\delta$										
B. A. C. 1417	6.4	+3.44	+ 7.6	+19 41.7	d h m	h m							
B.D. +20°, 785	5.8	3.47	7.4	20 30.1	17 3.4	+ 5 36.1	+0.6352	0.5662	+0.1388	+87	+ 7		
Tauri	4.7	3.50	5.4	21 27.6	18 8.9	+ 6 39.3	-0.0594	0.5665	0.1366	+37	-31		
B.D. +21°, 755	6.3	3.52	5.3	21 9.0	7 4 48.9	- 7 3.7	+0.2738	0.5690	0.1140	+57	-12		
105 Tauri	6.0	3.53	5.0	21 35.1	5 21.9	- 6 31.8	+0.6618	0.5691	0.1127	+90	+10		
					6 53.0	- 5 4.1	+0.3744	0.5693	0.1094	+64	- 5		
108 Tauri	6.2	+3.55	+ 4.4	+22 10.9	10 5.9	- 1 58.1	+0.0871	0.5698	+0.1022	+45	-19		
" Tauri	5.1	3.55	4.0	22 0.2	11 43.8	- 0 23.8	+0.4391	0.5701	0.0986	+69	0		
" Tauri	4.8	3.55	3.4	21 51.6	15 18.0	+ 3 2.6	+0.9286	0.5704	0.0904	+90	+29		
121 Tauri	5.1	3.60	2.6	23 58.8	18 35.7	+ 6 13.2	-1.0257	0.5708	0.0828	-23	-66		
Piazz v, 184	6.5	3.57	2.2	22 36.9	21 26.2	+ 8 57.4	+0.6432	0.5709	0.0762	+90	+13		
Piazz v, 192	6.0	+3.58	+ 2.0	+23 9.7	21 57.8	+ 9 27.9	+0.1050	0.5710	+0.0750	+46	-16		
132 Tauri	5.0	3.62	1.4	24 32.3	8 0 21.7	+11 46.6	-1.1802	0.5710	0.0693	-39	-66		
B.D. +24°, 1033	5.8	3.60	0.8	24 14.2	3 44.4	- 8 58.2	-0.6419	0.5710	0.0614	+ 4	-60		
1 Geminorum	4.1	3.57	+ 0.1	23 16.1	6 49.0	- 6 0.3	+0.5640	0.5709	0.0540	+80	+11		
3 Geminorum	5.6	3.56	- 0.2	23 7.7	9 12.6	- 3 41.9	+0.8360	0.5707	0.0483	+90	+27		
5 Geminorum	5.9	+3.60	- 0.6	+24 26.5	9 57.4	- 2 58.8	-0.5248	0.5707	+0.0466	+10	-50		
6 Geminorum	6.3	3.55	0.4	22 55.8	10 19.0	- 2 37.9	+1.1006	0.5707	0.0457	+90	+46		
8 Geminorum	6.1	3.58	0.9	24 0.0	12 0.1	- 1 0.5	+0.0347	0.5705	0.0416	+42	-16		
9 Geminorum	6.2	3.57	0.9	23 46.3	12 17.3	- 0 43.9	+0.2891	0.5704	0.0409	+58	- 3		
B. A. C. 2064	6.0	3.55	1.6	23 22.7	15 57.2	+ 2 48.0	+0.8444	0.5700	0.0322	+90	+29		
Piazz vi, 165	6.5	+3.56	- 2.8	+24 40.0	21 1.5	+ 7 41.2	-0.3999	0.5691	+0.0200	+17	-39		
Geminorum	3.2	3.57	3.4	25 13.3	23 47.6	+10 21.4	-0.9485	0.5685	0.0134	-17	-65		
B. A. C. 2238	5.8	3.51	3.9	23 42.6	9 3 17.6	-10 16.3	+0.7041	0.5677	0.0050	+90	+23		
37 Geminorum	5.7	3.54	4.4	25 29.4	4 41.2	- 8 55.6	-1.2016	0.5673	+0.0018	-43	-65		
Geminorum	5.2	3.50	4.8	24 20.8	7 46.4	- 5 57.1	+0.0208	0.5664	-0.0056	+41	-14		
48 Geminorum	5.8	+3.47	- 5.7	+24 16.9	12 7.4	- 1 45.4	+0.0437	0.5650	-0.0157	+43	-14		
52 Geminorum	6.1	3.49	6.0	25 2.6	13 5.4	- 0 49.5	-0.7936	0.5646	0.0180	- 6	-65		
A Geminorum	5.1	3.45	6.7	25 13.6	16 55.2	+ 2 52.2	-1.0776	0.5632	0.0268	-28	-65		
58 Geminorum	6.0	3.41	6.4	23 7.3	16 57.1	+ 2 54.0	+1.1928	0.5632	0.0269	+90	+56		
B.D. +23°, 1744	6.4	3.38	7.1	23 4.9	21 3.9	+ 6 52.1	+1.1067	0.5615	0.0363	+90	+47		
Mayer 319	6.3	+3.39	- 7.8	+24 33.9	23 24.9	+ 9 8.1	-0.5880	0.5605	-0.0416	+ 7	-54		
B. A. C. 2514	6.0	3.38	7.9	24 25.8	23 50.6	+ 9 32.9	-0.4594	0.5602	0.0425	+14	-45		
B.D. +23°, 1780	6.3	3.35	7.8	23 13.8	10 38.9	+10 19.6	+0.8040	0.5600	0.0443	+90	+25		
Geminorum	3.6	3.37	8.4	24 37.0	2 9.8	+11 47.3	-0.7673	0.5593	0.0477	- 4	-65		
82 Geminorum	6.3	3.32	8.4	23 22.0	4 0.6	-10 25.7	+0.4950	0.5584	0.0518	+74	+ 7		
B.D. +23°, 1866	6.4	+3.28	- 9.5	+23 50.0	9 34.0	- 5 3.9	-0.3324	0.5557	-0.0637	+21	-39		
" Cancr	6.2	3.24	9.6	22 53.8	11 57.6	- 2 45.2	+0.5281	0.5544	0.0688	+77	+ 7		
B.D. +23°, 1913	6.4	3.20	10.3	23 24.7	15 17.8	+ 0 28.1	-0.2744	0.5526	0.0757	+25	-37		
7 Cancr	4.9	3.04	11.9	21 47.8	11 4 55.8	-10 21.4	+0.2703	0.5449	0.1026	+57	-10		
Bradley 1299	6.1	2.88	13.7	21 39.5	19 17.1	+ 3 31.9	-1.2394	0.5363	0.1280	-44	-68		
B. D. +19°, 2251	6.5	+2.67	-14.6	+19 17.0	12 10 24.0	- 5 49.7	-0.7443	0.5274	-0.1514	- 1	-70		
B. D. +16°, 2077	6.3	2.50	14.5	16 12.1	21 4.1	+ 4 30.9	+0.9615	0.5215	0.1659	+90	+22		
" Leonis	3.6	2.50	14.9	17 12.4	21 53.5	+ 5 18.7	-0.2866	0.5210	0.1670	+25	-48		
42 Leonis	6.1	2.40	14.9	15 26.1	13 5 20.1	-11 28.0	+0.3945	0.5172	0.1761	+64	-13		
" Leonis	5.8	2.32	14.9	14 36.3	10 42.4	- 6 15.1	+0.3503	0.5146	0.1821	+61	-16		
" Leonis	5.5	+2.23	-15.4	+14 40.6	18 9.7	+ 0 59.0	-1.1152	0.5113	-0.1898	-26	-75		
" Leonis	4.1	2.00	14.9	11 1.9	14 14 12.2	- 3 32.8	-1.0657	0.5044	0.2069	-21	-79		
" Virginis	5.4	1.90	14.3	8 38.4	22 6.6	+ 4 8.4	-0.0766	0.5026	0.2123	+36	-43		
" Virginis	4.8	1.86	14.4	8 45.9	15 1 49.6	+ 7 45.1	-1.0090	0.5019	0.2145	-16	-81		
" Virginis	4.2	1.85	13.9	7 2.5	2 8.9	+ 8 3.9	+0.8279	0.5018	0.2147	+90	+ 6		
A Virginis	5.1	+1.84	-14.3	+ 8 45.2	3 16.3	+ 9 9.4	-1.3050	0.5016	-0.2153	-43	-81		
" Virginis	4.6	1.76	13.8	7 7.4	10 21.8	- 7 56.9	-1.0448	0.5008	0.2190	-19	-83		
B. D. +6°, 2543	6.5	1.74	13.7	6 4.1	11 56.8	- 6 24.5	-0.2273	0.5006	0.2197	+28	-52		
11 Virginis	5.6	1.70	13.6	6 18.9	15 24.8	- 3 2.3	-1.2630	0.5004	0.2212	-38	-84		
" Virginis	5.1	1.64	12.8	3 49.3	21 4.2	+ 2 27.8	+0.2279	0.5003	0.2233	+53	-28		
Piazz xii, 142	5.9	+1.56	-12.2	+ 2 21.5	16 6 56.6	-11 56.3	-0.3819	0.5009	-0.2260	+20	-62		

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

THE STAR'S				AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, H	Y	x'	y'	N. S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m				
80 Virginis	5.6	+1.30	-9.3	-4 55.8	17 13 49.7	-5 55.1	+0.5571	0.5087	-0.2264	+74 -11
Piazzi xiii, 174	6.4	1.26	9.2	5 2.3	18 16.2	-1 36.2	-0.3295	0.5106	0.2253	+22 -59
" Virginis	6.5	1.25	8.7	6 22.9	20 34.4	+0 38.0	+0.6062	0.5117	0.2247	+78 -8
Bradley 1820	6.1	1.22	8.3	7 36.5	18 0 3.9	+4 1.3	+1.1500	0.5134	0.2235	+82 +27
Piazzi xiii, 287	6.5	1.20	7.7	8 49.1	4 55.5	+8 44.4	+1.3702	0.5158	0.2215	+81 +56
95 Virginis	5.4	+1.18	-7.6	-8 52.6	6 8.8	+9 55.5	+1.1627	0.5166	-0.2210	+81 +28
B. A. C. 4828	6.2	1.04	6.0	11 55.0	21 30.5	+0 49.5	+1.0855	0.5261	0.2118	+78 +23
B.D. -12° 41' 34"	6.4	1.07	6.0	12 27.3	19 2 51.3	+6 0.5	+0.5366	0.5298	0.2075	+68 -12
♏ Libræ	5.7	1.03	6.1	11 31.5	6 2.0	+9 5.2	-1.1082	0.5322	0.2048	-28 -90
♏ Libræ	6.2	0.98	4.6	15 13.1	18 43.7	-2 37.5	+0.2891	0.5421	0.1917	+50 -24
♏ Libræ	5.9	+0.97	-4.3	-16 23.8	22 5.7	+0 37.8	+0.8939	0.5448	-0.1876	+74 +10
♏ Libræ	6.0	0.96	4.2	16 17.7	23 13.1	+1 43.0	+0.5758	0.5457	0.1862	+67 -9
♏ Libræ	5.6	0.96	4.2	16 32.6	20 0 15.4	+2 43.2	+0.6432	0.5466	0.1848	+71 -5
VENUS				18 6.3	7 28.5	+9 41.7	+0.9846	0.5010	0.1619	+72 +16
♏ Libræ	4.4	0.92	3.6	16 27.6	9 46.9	+11 55.4	-1.1398	0.5547	0.1715	-35 -90
♏ Scorpii	2.9	+0.91	-3.0	-19 33.3	14 55.0	-7 7.1	+1.2351	0.5591	-0.1634	+70 +41
♏ Scorpii	5.0	0.91	3.0	19 33.1	14 55.2	-7 6.9	+1.2307	0.5591	0.1634	+70 +40
B.D. -17° 45' 02"	6.4	0.89	3.1	18 5.8	16 55.2	-5 11.1	-0.6105	0.5608	0.1601	-2 -83
♏ Scorpii	3.9	0.90	-2.9	19 13.4	17 48.6	-4 19.7	+0.4215	0.5616	-0.1586	+54 -17
NEW MOON.										
4 Capricorni	5.7	+1.01	+2.6	-22 5.6	24 19 20.1	-6 38.0	-0.9243	0.5999	+0.0868	-29 -90
Piazzi xx, 146	6.2	1.05	2.7	22 41.8	23 46.6	-2 22.3	+0.0919	0.5983	0.0984	-28 -35
17 Capricorni	5.8	1.09	3.1	21 50.9	25 6 16.3	+3 51.6	-0.0652	0.5954	0.1150	+21 -44
♐ Capricorni	4.8	1.13	3.8	20 13.1	13 28.4	+10 46.6	-0.8067	0.5917	0.1324	-17 -90
♐ Capricorni	5.3	+1.16	+3.5	-21 33.8	15 6.3	-11 39.3	+0.7594	0.5908	+0.1362	+68 -3
27 Capricorni	6.1	1.16	3.6	20 55.5	15 30.0	-11 16.6	+0.1748	0.5906	0.1371	+36 -30
♐ Capricorni	5.3	1.17	3.8	21 2.0	17 55.7	-8 56.6	+0.6220	0.5892	0.1426	+64 -6
B. A. C. 7463	6.5	1.22	4.4	19 32.9	23 42.7	-3 23.1	-0.0040	0.5857	0.1552	+28 -40
37 Capricorni	5.7	1.24	4.3	20 29.6	24 1 40.3	-1 29.9	+1.2515	0.5845	0.1592	+70 +44
♐ Capricorni	4.7	+1.24	+4.4	-19 52.6	2 34.9	-0 37.5	+0.7797	0.5839	+0.1611	+70 +4
♐ Capricorni	4.8	1.27	4.6	19 17.1	4 51.2	+1 33.7	+0.5571	0.5824	0.1657	+62 -10
B.D. -17° 63' 89"	6.5	1.28	5.2	17 16.4	7 58.4	+4 33.7	-0.9322	0.5804	0.1718	-21 -90
B.D. -19° 61' 76"	6.1	1.29	4.8	19 3.0	8 33.7	+5 7.7	+0.9506	0.5801	0.1729	+71 +15
B. A. C. 7665	6.4	1.34	5.1	18 20.6	12 54.7	+9 18.8	+1.0124	0.5772	0.1809	+72 +19
29 Aquarii	6.5	+1.33	+5.4	-17 24.4	13 1.5	+9 25.4	+0.0931	0.5771	+0.1811	+37 -35
56 Aquarii	6.1	1.44	6.5	15 3.3	27 0 46.0	-3 16.2	-0.0246	0.5694	0.2002	+33 -42
♑ Aquarii	5.6	1.51	6.8	14 32.4	8 15.8	+3 57.4	+0.9996	0.5646	0.2106	+75 +17
♑ Aquarii	4.4	1.52	7.0	14 4.6	9 5.0	+4 44.9	+0.7071	0.5641	0.2116	+76 -2
74 Aquarii	5.8	1.53	7.7	12 6.2	10 47.0	+6 23.2	-0.9146	0.5631	0.2137	-15 -90
B. A. C. 8004	6.3	+1.56	+7.3	-13 33.7	13 27.0	+8 57.5	+1.1260	0.5614	+0.2169	+76 +20
B.D. -11° 60' 32"	6.3	1.62	8.1	11 11.2	20 6.7	-8 36.8	+0.2053	0.5575	0.2240	+48 -20
♑ Aquarii	4.5	1.65	8.7	9 35.2	20 38.6	-8 6.0	-1.2871	0.5572	0.2246	-44 -90
♑ Aquarii	4.6	1.64	8.7	9 40.9	21 33.2	-7 13.4	-0.9859	0.5567	0.2254	-18 -90
♑ Aquarii	5.2	1.64	8.5	10 6.7	22 1.4	-6 46.1	-0.4478	0.5564	0.2259	+14 -68
B.D. -10° 61' 20"	6.3	+1.69	+8.7	-9 46.2	28 2 31.6	-2 25.2	+0.2342	0.5540	+0.2298	+51 -25
B. A. C. 8214	6.5	1.72	9.4	7 58.3	5 28.1	+0 25.3	-0.9012	0.5525	0.2322	-11 -90
Mayer 1012	6.3	1.79	9.7	6 53.3	11 22.5	+6 7.7	-0.6115	0.5497	0.2363	+7 -81
30 Piscium	4.7	1.86	9.8	6 31.4	17 31.4	-11 55.9	+0.4818	0.5471	0.2396	+68 -15
33 Piscium	4.7	1.87	10.1	6 13.2	19 5.0	-10 25.5	+0.5491	0.5465	0.2404	+73 -11
Piazzi o. 1	6.0	+1.90	+10.1	-5 45.4	21 22.9	-8 12.1	+0.6343	0.5457	+0.2413	+81 -8
B. A. C. 81	6.3	1.98	11.1	2 43.5	29 3 58.2	-1 49.9	-0.8435	0.5435	0.2434	-5 -90
14 Ceti	5.4	2.05	11.6	1 0.5	9 7.6	+3 9.2	-1.3320	0.5420	0.2443	-46 -90
20 Ceti	4.9	2.13	11.3	-1 38.4	17 20.7	+11 6.3	+1.3232	0.5403	0.2447	+88 +44
26 Ceti	6.0	2.21	12.0	+0 52.6	22 26.2	-7 58.2	+0.0011	0.5395	0.2442	+40 -40
33 Ceti	6.1	+2.24	+12.3	+1 57.6	30 1 37.6	-4 53.1	-0.3259	0.5392	+0.2437	+23 -59

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.											
DECEMBER.											
THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1908.0.		Apparent Declination.	Washington Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	"								
<i>f</i> Piscium	5.1	+2.29	+12.6	+ 3 8.0	30 5 3.2	- 1 34.2	-0.6934	0.5389	+0.2428	+ 3	-87
Lalande 2632	6.5	2.35	12.4	3 3.7	9 21.7	+ 2 35.9	+0.4233	0.5387	0.2414	+66	-18
<i>v</i> Piscium	4.6	2.44	12.7	5 1.6	16 14.7	+ 9 15.6	+0.0618	0.5388	0.2384	+44	-36
Piazz i, 249	6.5	2.59	12.8	7 17.9	31 3 18.8	- 4 1.8	+0.3286	0.5398	0.2316	+59	-21
64 Ceti	5.8	2.62	12.7	8 8.6	6 23.1	- 1 3.5	+0.1654	0.5402	0.2292	+49	-30
ξ^1 Ceti	4.5	+2.64	+12.9	+ 8 25.1	7 9.2	- 0 18.9	+0.0569	0.5403	+0.2286	+43	-35
ξ Arietis	5.5	2.73	13.0	10 11.9	12 41.9	+ 5 3.0	-0.5257	0.5414	0.2239	+12	-69
25 Arietis	6.5	2.72	12.6	9 47.6	13 55.6	+ 6 14.3	+0.1661	0.5416	0.2227	+49	-29
B. F. 310	6.3	2.75	12.5	0 9.5	14 57.0	+ 7 13.7	+1.0509	0.5418	0.2218	+90	+22
31 Arietis	5.7	+2.85	+13.0	+12 3.2	18 12.4	+10 22.6	-1.2273	0.5426	+0.2186	-35	-78

OCCULTATIONS VISIBLE AT WASHINGTON DURING THE YEAR 1908.

Date.	THE STAR'S		IMMERISION.				EMERSION.				Duration of Oc- cultation.
			Washington.		Angle from—		Washington.		Angle from—		
	Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
Jan. 8	30 Piscium	4.7	1 18	6 9	93	72	2 19	7 10	203	170	1 1
13	B. D. +16°, 569	6.2	2 43	7 14	54	91	4 9	8 41	256	256	1 27
13	♂ Tauri †	4.3	10 51	15 21	85	34	11 46	16 16	261	214	0 55
14	Mayer 198	6.3	4 28	8 56	135	153	5 13	9 40	192	185	0 44
16	NEPTUNE	.	12 53	17 11	148	94	13 30	17 48	228	177	0 37
18	♂ Cancri	5.4	4 48	9 0	86	142	6 10	10 21	284	336	1 21
18	39 Cancri	6.5	10 11	14 22	105	60	11 34	15 45	294	239	1 23
18	40 Cancri	6.5	10 16	14 27	111	66	11 40	15 50	288	232	1 23
22	♂ Virginis	4.2	6 50	10 45	127	179	7 58	11 54	278	328	1 9
27	♂ Libræ †	4.4	9 57	13 33	90	142	10 50	14 26	316	4	0 53
29	B. A. C. 6088	5.7	14 1	17 28	99	142	15 7	18 34	289	322	1 6
Feb. 10	B. D. +19°, 811	6.2	8 40	11 21	124	68	9 35	12 16	224	168	0 55
11	♂ Tauri	3.0	2 27	5 4	77	133	3 50	6 27	249	295	1 23
13	♂ Geminorum	3.5	2 8	4 38	107	163	3 12	5 42	240	298	1 4
14	Piazzii viii, 42	6.0	8 7	10 32	126	131	9 34	11 59	262	222	1 27
24	B. A. C. 5567	6.5	16 57	18 41	144	139	18 4	19 48	250	231	1 7
25	52 Ophiuchi	6.4	14 26	16 6	38	74	14 52	16 33	355	27	0 27
26	Bradley 2335	5.8	15 0	16 37	109	148	16 10	17 47	270	299	1 10
26	26 Sagittarii	6.1	17 22	18 59	182	198	17 27	19 4	190	205	0 5
Mar. 7	Mayer 121	6.4	5 11	6 10	44	6	6 26	7 25	275	224	1 15
10	♂ Geminorum	3.5	5 39	6 26	25	46	6 29	7 16	320	307	0 50
11	44 Geminorum	5.9	4 11	4 54	46	102	5 18	6 1	303	351	1 7
11	♂ Geminorum	3.5	13 27	14 9	117	64	14 20	15 2	262	214	0 53
19	♂ Virginis	6.5	16 40	16 50	109	70	17 53	18 2	303	257	1 12
22	B. A. C. 5408	6.4	11 36	11 35	73	120	12 26	12 24	335	16	0 49
Apr. 5	♂ Tauri	5.2	10 21	9 25	129	74	11 6	10 10	224	171	0 45
6	141 Tauri	6.3	10 54	9 54	34	337	11 27	10 27	332	277	0 33
8	B. A. C. 2544	6.3	8 33	7 26	64	30	9 44	8 36	320	268	1 10
9	39 Cancri	6.5	12 47	11 34	157	101	13 32	12 20	241	186	0 46
9	40 Cancri	6.5	12 56	11 44	168	112	13 31	12 19	231	175	0 35
13	♂ Virginis	4.2	8 13	6 46	110	158	9 31	8 4	306	344	1 18
23	27 Capricorni	6.1	19 14	17 6	122	145	20 9	18 1	208	220	0 55
24	29 Aquarii †	6.5	16 30	14 18	80	131	17 31	15 20	256	302	1 2
May 5	58 Geminorum	6.0	9 50	6 56	52	356	10 40	7 46	331	273	0 50
14	B. D. -12°, 4134	6.4	16 14	12 44	151	129	17 20	13 50	263	229	1 6
20	17 Capricorni	5.8	16 20	12 26	53	98	17 16	13 22	297	336	0 56
June 9	80 Virginis	5.6	16 11	10 59	113	76	17 25	12 12	304	258	1 13
11	♂ Libræ	6.2	19 7	13 46	116	73	20 13	14 52	277	228	1 6
13	Bradley 2162	6.3	13 16	7 48	54	96	13 53	8 25	346	22	0 37
14	Bradley 2276	5.2	14 43	9 11	72	111	15 43	10 11	314	343	1 0
15	B. A. C. 6576	6.1	14 36	9 0	119	166	15 34	9 59	254	293	0 59
15	♂ Sagittarii	5.5	19 41	14 4	55	50	20 51	15 14	291	272	1 10
16	Piazzii xx, 146	6.2	19 31	13 51	61	73	20 48	15 7	274	269	1 16
July 4	♂ Virginis	4.2	16 18	9 27	67	16	16 59	10 8	346	294	0 41
12	26 Sagittarii	6.1	14 4	6 42	32	79	14 28	7 6	348	31	0 24
14	27 Capricorni	6.1	22 46	15 15	88	66	23 51	16 19	228	195	1 4
17	30 Piscium	4.7	22 7	14 24	338	5	22 17	14 34	322	348	0 10
17	33 Piscium	4.7	23 40	15 57	42	47	0 56	17 12	251	236	1 15
18	20 Ceti	4.9	20 21	12 35	117	166	21 0	13 13	187	233	0 38
Aug. 3	♂ Virginis †	6.5	18 50	10 1	99	49	19 50	11 1	304	252	1 0

NOTE.—The angles of position are counted from the north point and vertex of the Moon's limb, toward the east.

* Whole occultation below the horizon of Washington.

† Immersion below the horizon of Washington.

‡ Emersion below the horizon of Washington.

OCCULTATIONS VISIBLE AT WASHINGTON DURING THE YEAR 1908

Date.	THE STAR'S		IMMERSSION.				EMERSION.				Duration of Oc- culation.
			Washington.		Angle from—		Washington.		Angle from—		
	Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
Aug. 5	♄ Libræ	6.2	h m 15 57	h m 7 0	° 114	° 104	h m 17 21	h m 8 24	° 297	° 270	h m 1 24
	Bradley 2276	5.2	15 0	5 52	52	87	15 46	6 38	334	2	0 46
	B. A. C. 6576	6.1	14 51	5 39	106	151	15 55	6 43	266	303	1 4
	♄ Sagittarii	5.5	20 4	10 51	49	39	21 9	11 56	296	273	1 5
	Piazz i, 146	6.2	19 14	9 57	59	74	20 27	11 10	278	277	1 13
Sept. 6	B. A. C. 6814	6.3	17 38	6 35	137	164	18 27	7 24	216	234	0 49
	♄ Capricorni	6.1	23 58	12 50	97	62	0 53	13 45	218	177	0 55
	B. D.—11°, 6032	6.3	2 20	15 4	92	53	3 13	15 57	210	164	0 53
	♄ Piscium	4.7	20 36	9 18	30	72	21 34	10 15	273	307	0 57
	♄ Piscium	4.7	22 21	11 2	62	88	23 36	12 17	232	239	1 15
	Piazz i, 249	6.5	5 6	17 38	57	11	6 13	18 45	251	201	1 7
	♄ Ceti †	6.3	19 40	8 9	70	120	20 32	9 1	243	295	0 52
	Mayer 121 †	6.4	20 36	9 2	83	133	21 27	9 52	233	285	0 50
	Mayer 136	5.9	5 43	18 7	44	0	6 53	19 17	279	226	1 10
	Piazz v, 184	6.5	5 42	17 58	55	51	7 4	19 20	287	242	1 22
	♄ Geminorum	6.0	2 2	14 11	125	181	2 53	15 1	224	282	0 50
	Lalande 2632	6.5	23 0	9 47	14	51	23 52	10 38	280	308	0 51
	♄ Piscium †	4.6	7 29	18 14	46	355	8 18	19 3	270	220	0 49
	♄ Arietis	6.5	3 2	13 44	16	0	4 0	14 42	281	248	0 58
	♄ Tauri	5.1	6 8	16 38	75	43	7 34	18 3	265	212	1 25
	Oct. 14	♄ Geminorum	5.6	2 47	13 14	124	182	3 40	14 7	209	263	0 53
♄ Geminorum		6.2	7 44	18 10	30	342	8 26	18 52	331	276	0 42
♄ Cancri		6.2	8 12	18 30	84	75	9 38	19 55	304	256	1 25
♄ Leonis		5.8	7 9	17 15	52	104	7 51	17 57	352	40	0 42
B. A. C. 5436		6.2	19 11	4 47	74	38	20 16	5 52	310	267	1 5
♄ Capricorni		5.3	19 55	5 12	54	71	21 14	6 30	269	268	1 18
♄ Piscium		4.7	21 16	6 21	19	56	22 10	7 15	280	308	0 54
Piazz o, 1		6.0	0 8	9 13	81	80	1 16	10 20	209	190	1 7
Piazz i, 249		6.5	5 17	14 13	87	39	6 18	15 14	222	171	1 1
♄ Ceti †		6.3	19 48	4 41	116	166	20 20	5 14	196	247	0 33
Mayer 136		5.9	4 33	13 21	106	83	5 37	14 25	210	167	1 4
Nov. 8	Piazz iii, 215	5.8	9 9	17 56	33	338	9 51	18 38	305	252	0 42
	B. A. C. 1417	6.4	21 34	6 19	25	74	22 10	6 55	297	349	0 36
	Piazz v, 184	6.5	1 52	10 32	104	162	2 53	11 33	221	277	1 1
	B. A. C. 2238	5.8	10 30	19 5	153	94	11 11	19 46	224	165	0 41
	♄ Geminorum	6.3	11 16	19 47	88	30	12 22	20 53	302	244	1 6
	B. A. C. 6465	6.4	21 25	5 3	52	21	22 28	6 6	292	252	1 3
	B. A. C. 6479 †	6.4	22 22	6 0	82	43	23 28	7 6	260	213	1 6
	♄ Piscium	4.6	4 25	11 35	0	317	5 1	12 11	300	253	0 36
	Piazz iii, 103 *	6.3	10 30	17 31	36	347	11 9	18 9	300	254	0 38
	B. A. C. 1417 †	6.4	11 4	18 1	121	70	11 46	18 43	226	178	0 42
	♄ Tauri	5.1	3 53	10 47	100	142	5 10	12 4	227	230	1 17
Dec. 7	♄ Geminorum †	4.1	22 26	5 17	37	83	23 3	5 54	300	349	0 37
	♄ Geminorum	5.6	0 51	7 42	157	213	1 1	7 51	176	232	0 9
	♄ Geminorum	6.1	4 35	11 25	4	52	4 57	11 46	334	17	0 21
	♄ Geminorum	6.2	4 20	11 10	80	132	5 47	12 37	260	279	1 27
	♄ Geminorum	5.8	4 22	11 8	9	67	4 42	11 28	340	36	0 20
	♄ Cancri	6.2	3 36	10 18	134	192	4 29	11 11	226	284	0 53
	♄ Libræ	6.2	10 48	16 54	81	128	11 41	17 46	336	17	0 52
	♄ Capricorni	4.8	23 32	5 11	41	17	0 36	6 16	266	230	1 5
	Lalande 2632	6.5	4 33	9 57	84	38	5 36	10 59	220	170	1 2

NOTE.—The angles of position are counted from the north point and vertex of the Moon's limb, toward the east.

* Whole occultation below the horizon of Washington.

† Immersion below the horizon of Washington.

‡ Emerision below the horizon of Washington.

FOR WASHINGTON MEAN NOON.

Date.	k	i	θ	L	Date.	k	i	θ	L
Jan. 1	0.980	16	179	24.8	July 4	0.008	170	91	1.3
6	0.992	10	151	25.1	9	0.031	160	150	5.4
11	0.998	5	125	26.5	14	0.100	143	165	15.2
16	0.998	6	43	29.3	19	0.206	126	173	27.5
21	0.988	13	9	33.8	24	0.340	109	178	40.8
26	0.961	23	355	40.8	29	0.510	89	184	54.7
31	0.907	35	348	52.9	Aug. 3	0.690	68	190	65.3
Feb. 5	0.804	53	342	62.0	8	0.849	46	198	69.0
10	0.637	74	337	69.4	13	0.960	23	208	64.5
15	0.413	100	333	61.8	18	0.995	8	241	53.9
20	0.188	132	327	26.0	23	0.990	12	353	44.2
25	0.039	157	310	8.5	28	0.968	21	12	39.1
Mar. 1	0.011	163	193	3.5	Sept. 2	0.936	29	19	32.4
6	0.100	142	172	17.4	7	0.901	37	22	29.5
11	0.202	126	164	27.0	12	0.859	44	24	27.9
16	0.316	112	160	32.3	17	0.817	50	25	27.7
21	0.423	99	158	34.3	22	0.772	57	26	28.5
26	0.504	90	156	33.1	27	0.715	65	26	30.5
31	0.574	82	154	32.0	Oct. 2	0.644	73	25	33.4
Apr. 5	0.643	73	152	32.0	7	0.553	84	25	37.1
10	0.706	66	150	32.3	12	0.434	98	25	39.7
15	0.762	59	150	34.5	17	0.283	116	26	36.9
20	0.828	49	150	37.5	22	0.113	141	29	21.1
25	0.894	38	150	48.5	27	0.003	164	45	0.6
30	0.955	24	152	52.1	Nov. 1	0.062	151	205	9.8
May 5	0.995	8	153	61.2	6	0.272	117	207	48.2
10	0.989	12	337	67.0	11	0.509	89	207	58.4
15	0.921	33	341	67.1	16	0.692	67	206	55.5
20	0.803	53	346	61.5	21	0.813	51	204	46.1
25	0.677	69	351	51.5	26	0.887	39	201	37.6
30	0.555	84	355	43.9	Dec. 1	0.937	28	197	31.7
June 4	0.444	96	359	37.5	6	0.964	22	193	27.9
9	0.343	108	3	32.5	11	0.983	15	184	25.6
14	0.250	120	6	27.0	16	0.993	9	173	24.5
19	0.163	132	10	20.4	21	1.000	3	136	24.6
24	0.085	146	17	12.3	26	0.999	4	47	25.8
29	0.030	160	31	4.7	31	0.990	11	17	28.2

NOTATION.

k = the ratio of the area of the illuminated portion of the apparent disk to the area of the entire apparent disk regarded as circular.

i = the angle between the Sun and Earth, as seen from the planet.

θ = the angle which the line joining the cusps, or extremities of the illuminated portion, makes with the meridian.

L = the brilliancy of the disk. The unit of L is the amount of light received by an eye from a circular disk with the same albedo as the planet, subtending an angular radius of one second of arc, situated at distance unity from the Sun, and illuminated by the latter as the mean disk of the planet is illuminated.

FOR WASHINGTON MEAN NOON.

Date.	k	i	θ	L	Date.	k	i	θ	L
Jan. 1	0.897	37.4	348.7	58.6	July 5	0.003	174.4	85.3	4.3
6	0.887	39.2	346.6	59.9	7	0.004	173.0	124.2	6.1
11	0.877	41.0	344.8	61.2	9	0.008	169.8	145.0	12.8
16	0.866	42.8	343.1	62.7	11	0.015	166.0	154.6	23.5
21	0.855	44.6	341.6	64.3	13	0.024	162.1	159.6	37.3
26	0.844	46.4	340.3	66.1	15	0.036	158.0	162.9	53.8
31	0.832	48.3	339.3	68.1	17	0.049	154.2	165.6	71.4
Feb. 5	0.819	50.2	338.5	70.1	19	0.064	150.5	167.1	89.3
10	0.806	52.1	337.9	72.3	21	0.081	146.7	168.2	106.8
15	0.793	54.1	337.5	74.7	23	0.099	143.3	169.3	122.8
20	0.779	56.1	337.3	77.3	25	0.118	139.9	170.3	137.0
25	0.764	58.2	337.4	80.1	27	0.136	136.7	171.2	149.4
Mar. 1	0.748	60.3	337.6	83.1	29	0.155	133.7	172.0	159.7
6	0.731	62.5	338.1	86.4	31	0.173	130.8	172.8	168.3
11	0.714	64.7	338.8	89.9	Aug. 2	0.191	128.0	173.6	175.1
16	0.695	67.0	339.6	93.7	4	0.210	125.4	174.4	180.2
21	0.676	69.4	340.7	97.8	6	0.228	122.9	175.2	183.8
26	0.656	71.8	342.0	102.3	8	0.246	120.5	176.0	186.1
31	0.636	74.3	343.4	107.3	13	0.288	115.1	177.9	187.0
Apr. 5	0.614	76.9	345.0	112.6	18	0.327	110.2	180.0	183.0
10	0.591	79.6	346.7	118.4	23	0.364	105.7	182.2	177.0
15	0.566	82.5	348.5	124.7	28	0.399	101.6	184.4	169.4
20	0.539	85.5	350.5	131.4	Sept. 2	0.432	97.9	186.5	161.4
25	0.512	88.6	352.5	138.7	7	0.462	94.4	188.7	153.1
30	0.483	91.9	354.6	146.6	12	0.491	91.0	191.0	145.4
May 5	0.452	95.4	356.5	154.8	17	0.519	87.8	193.3	138.1
10	0.420	99.1	358.3	163.0	22	0.545	84.8	195.3	131.1
15	0.385	103.1	0.1	171.0	27	0.569	82.1	197.0	124.5
20	0.349	107.5	1.7	178.0	Oct. 2	0.593	79.4	198.7	118.5
25	0.310	112.3	3.1	183.0	7	0.615	76.7	200.3	112.9
30	0.268	117.6	4.4	184.8	12	0.636	74.2	201.7	107.6
June 4	0.224	123.6	5.6	181.0	17	0.656	71.9	202.9	102.8
9	0.176	130.3	6.7	167.4	22	0.675	69.5	203.8	98.4
11	0.158	133.2	7.1	159.5	27	0.694	67.2	204.6	94.4
13	0.139	136.2	7.6	149.7	Nov. 1	0.712	64.9	205.0	90.7
15	0.120	139.4	8.1	137.6	6	0.729	62.7	205.3	87.3
17	0.101	142.8	8.7	123.3	11	0.746	60.5	205.2	84.1
19	0.084	146.2	9.5	107.6	16	0.763	58.4	205.0	81.1
21	0.067	149.9	10.5	91.0	21	0.778	56.3	204.4	78.3
23	0.052	153.6	11.9	73.7	26	0.792	54.3	203.6	75.7
25	0.038	157.2	13.7	56.4	Dec. 1	0.806	52.2	202.4	73.3
27	0.026	161.2	16.4	39.8	6	0.819	50.2	201.0	71.0
29	0.016	165.5	21.3	25.0	11	0.832	48.2	199.3	69.0
July 1	0.009	169.3	30.0	14.0	16	0.845	46.3	197.5	67.1
3	0.004	172.7	48.1	7.1	21	0.856	44.4	195.2	65.3
5	0.003	174.4	85.3	4.3	26	0.867	42.6	192.9	63.5
					31	0.878	40.8	190.3	61.9

NOTATION.

k = the ratio of the area of the illuminated portion of the apparent disk to the area of the entire apparent disk regarded as circular.

i = the angle between the Sun and Earth, as seen from the planet.

θ = the angle which the line joining the cusps, or extremities of the illuminated portion, makes with the meridian.

L = the brilliancy of the disk. The unit of L is the amount of light received by an eye from a circular disk with the same albedo as the planet, subtending an angular radius of one second of arc, situated at distance unity from the Sun, and illuminated by the latter as the mean disk of the planet is illuminated.

MARS not being in opposition during the year 1908 the satellites will not be visible.

APPARENT DISK OF MARS, 1908.

		k
January	1,	0.878
January	31,	0.901
March	1,	0.924
March	31,	0.945
April	30,	0.964
May	30,	0.980
June	29,	0.992
July	29,	0.998
August	28,	1.000
September	27,	0.996
October	27,	0.986
November	26,	0.972
December	26,	0.952

k = the ratio of the area of the illuminated portion of the apparent disk to the area of the entire apparent disk regarded as circular.

SATELLITE V.

WASHINGTON MEAN TIME OF EVERY TWENTIETH GREATEST ELONGATION.

Jan.	d	h	E.	Apr.	d	h	E.	Jan.	d	h	W.	Apr.	d	h	W.
	11	8.0	E.		10	12.0	E.		11	14.0	W.		10	6.0	W.
	21	7.1	E.		20	11.2	E.		21	13.1	W.		20	17.2	W.
	31	6.2	E.		30	10.3	E.		31	12.2	W.		30	16.3	W.
Feb.	10	17.3	E.	May	10	9.5	E.	Feb.	10	11.3	W.	May	10	15.5	W.
	20	16.4	E.		20	8.7	E.		20	10.4	W.		20	14.7	W.
Mar.	1	15.5	E.	Dec.	11	15.9	E.	Mar.	1	9.5	W.	Dec.	11	9.9	W.
	11	14.6	E.		21	15.0	E.		11	8.6	W.		21	9.0	W.
	21	13.7	E.		31	14.1	E.		21	7.7	W.		31	8.1	W.
	31	12.8	E.						31	6.9	W.				

WASHINGTON MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.

SATELLITE I.

Jan.	1	h	m	Mar.	20	h	m	June	8	h	m	Oct.	17	h	m
	3	3	22.0		22	17	7.9		10	8	51.1		19	10	1.1
	4	21	48.1		24	11	35.5		12	3	21.1		21	4	30.6
	6	16	14.2		26	6	3.1		13	21	51.1		22	23	0.0
	8	10	40.3		28	0	30.8		15	16	21.1		24	17	29.5
	10	5	6.3		29	18	58.6		17	10	51.2		26	11	58.9
	11	23	32.3		31	13	26.5		19	5	21.3		28	6	28.2
	13	17	58.3	Apr.	2	7	54.5		20	23	51.4		30	0	57.5
	15	12	24.2		4	2	22.5		22	18	21.5		31	19	26.8
	17	6	50.1		5	20	50.6		24	12	51.7	Nov.	2	13	56.0
	19	1	16.0		7	15	18.8		26	7	21.8		4	8	25.2
	20	19	41.9		9	9	47.0		28	1	52.0		6	2	54.3
	22	14	7.8		11	4	15.3		29	20	22.2		7	21	23.4
	24	8	33.7		12	22	43.7	July	1	14	52.5		9	15	52.5
	26	2	59.6		14	17	12.1		3	9	22.7		11	10	21.5
	27	21	25.4		16	11	40.6		5	3	53.0		13	4	50.4
	29	15	51.3		18	6	9.2		6	22	23.2		14	23	19.3
	31	10	17.2		20	0	37.9		8	16	53.5		16	17	48.1
Feb.	2	4	43.1		21	19	6.6		10	11	23.8		18	12	16.9
	3	23	9.0		23	13	35.4		12	5	54.1		20	6	45.6
	5	17	35.0		25	8	4.2		14	0	24.4		22	1	14.2
	7	12	1.0		27	2	33.1		15	18	54.7		23	19	42.8
	9	6	27.0		28	21	2.0		17	13	25.0		25	14	11.4
	11	0	53.1		30	15	31.0						27	8	39.9
	12	19	19.2	May	2	10	0.1						29	3	8.3
	14	13	45.3		4	4	29.2						30	21	36.7
	16	8	11.5		5	22	58.4						2	16	5.0
	18	2	37.7		7	17	27.6						4	10	33.2
	19	21	4.0		9	11	56.9	Sept.	17	13	4.4		6	5	1.4
	21	15	30.3		11	6	26.2		19	7	34.4		7	23	29.6
	23	9	56.7		13	0	55.6		21	2	4.4		9	17	57.7
	25	4	23.1		14	19	25.0		22	20	34.4		11	12	25.7
	26	22	49.6		16	13	54.5		24	15	4.4		13	6	53.6
	28	17	16.2		18	8	24.0		26	9	34.4		15	1	21.5
Mar.	1	11	42.8		20	2	53.6		28	4	4.3		16	19	49.3
	3	6	9.5		21	21	23.2		29	22	34.2		18	14	17.0
	5	0	36.3		23	15	52.8	Oct.	1	17	4.0		20	8	44.7
	6	19	3.1		25	10	22.5		3	11	33.9		22	3	12.3
	8	13	30.0		27	4	52.2		5	6	3.7		23	21	39.8
	10	7	57.0		28	23	21.9		7	0	33.5		25	16	7.2
	12	2	24.1		30	17	51.7		8	19	3.2		27	10	34.6
	13	20	51.2	June	1	12	21.5		10	13	33.0		29	5	2.0
	15	15	18.4		3	6	51.3		12	8	2.7		30	23	29.3
	17	9	45.7		5	1	21.2		14	2	32.4		32	17	56.6
	19	4	13.0		6	19	51.1		15	21	2.0				

WASHINGTON MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.

SATELLITE II.

		h	m			h	m			h	m			h	m
Jan.	1	18	18.2	Mar.	23	8	34.0	June	13	2	28.8	Oct.	15	15	26.2
	5	7	26.3		26	21	46.9		16	15	51.1		19	4	48.8
	8	20	34.6		30	11	0.3		20	5	13.7		22	18	12.1
	12	9	42.0	Apr.	3	0	14.2		23	18	36.3		26	7	34.2
	15	22	49.6		6	13	28.7		27	7	59.2		29	20	56.9
	19	11	56.6		10	2	43.8		30	21	22.3	Nov.	2	10	18.4
	23	1	3.9		13	15	59.4	July	4	10	45.5		5	23	40.4
	26	14	10.6		17	5	15.5		8	0	8.9		9	13	1.2
	30	3	17.6		20	18	32.1		11	13	32.5		13	2	22.5
Feb.	2	16	24.4		24	7	49.2		15	2	56.2		16	15	42.5
	6	5	31.6		27	21	6.7						20	5	3.2
	9	18	38.6	May	1	10	24.7						23	18	22.3
	13	7	46.1		4	23	43.1						27	7	42.1
	16	20	53.7		8	13	1.9					Dec.	30	21	0.3
	20	10	1.8		12	2	21.1						4	10	19.1
	23	23	10.1		15	15	40.6	Sept.	17	4	15.6		7	23	36.2
	27	12	19.0		19	5	0.6		20	17	39.6		11	12	54.0
Mar.	2	1	28.1		22	18	20.8		24	7	4.1		15	2	10.2
	5	14	37.8		26	7	41.4		27	20	27.8		18	15	26.8
	9	3	48.0		29	21	2.3	Oct.	1	9	52.1		22	4	41.9
	12	16	58.7	June	2	10	23.5		4	23	15.6		25	17	57.4
	16	6	9.9		5	23	45.0		8	12	39.5		29	7	11.2
	19	19	21.7		9	13	6.8		12	2	2.6		32	20	25.5

SATELLITE III.

		h	m			h	m			h	m			h	m
Jan.	4	7	6.4	Mar.	29	23	49.0	June	24	1	6.6	Oct.	9	19	29.7
	11	10	25.2	Apr.	6	3	35.1	July	1	5	29.7		16	23	49.8
	18	13	41.9		13	7	25.8		8	9	54.8		24	4	7.2
	25	16	57.5		20	11	20.6		15	14	20.3		31	8	22.1
Feb.	1	20	12.9		27	15	19.4					Nov.	7	12	34.0
	8	23	29.6	May	4	19	22.5						14	16	43.0
	16	2	47.3		11	23	29.2						21	20	49.2
	23	6	7.8		19	3	39.7						29	0	51.6
Mar.	1	9	31.2		26	7	52.5	Sept.	18	6	21.3	Dec.	6	4	50.6
	8	12	58.5	June	2	12	8.0		25	10	45.3		13	8	44.8
	15	16	30.4		9	16	25.5	Oct.	2	15	8.3		20	12	34.4
	22	20	7.1		16	20	44.9						27	16	19.4

SATELLITE IV.

		h	m			h	m			h	m			h	m
Jan.	11	7	0.6	Apr.	20	2	50.4					Oct.	5	10	45.2
	27	21	8.8	May	6	21	3.3						22	6	43.6
Feb.	13	11	14.9		23	16	1.5					Nov.	8	2	11.9
Mar.	1	1	48.4	June	9	11	35.7						24	21	1.2
	17	17	10.5		26	7	37.4					Dec.	11	15	2.6
Apr.	3	9	30.8	July	13	3	58.4	Sept.	18	14	25.6		28	8	8.0

WASHINGTON MEAN TIME.

JANUARY.

d	h	m	s	I	Ec.	Dis.	d	h	m	s	III.	Ec.	Dis.	d	h	m	s	I*	Sh.	Eg.
1	7	8	31	I	Ec.	Dis.	11	6	53	19	IV.*	Ec.	Re.	21	18	0		I*	Sh.	Eg.
	10	6		I*	Ec.	Re.		9	26		IV.*	Ec.	Re.		18	11		I*	Tr.	Eg.
	15	33	2	II.*	Ec.	Dis.		12	16		III.*	Ec.	Re.	22	0	58		III.	Sh.	In.
	19	46		II.	Ec.	Re.		21	59	7	I.	Ec.	Dis.		1	40		III.	Tr.	In.
2	4	26		I.	Sh.	In.	12	0	42		I.	Ec.	Re.		4	39		III.	Sh.	Eg.
	5	5		I	Tr.	In.		7	26	0	II.*	Ec.	Dis.		5	23		III.	Tr.	Eg.
	6	46		I	Sh.	Eg.		11	10		II.*	Ec.	Re.		12	50	4	I*	Ec.	Dis.
	7	25		I.	Tr.	Eg.		19	17		I.	Sh.	In.		15	18		I*	Ec.	Re.
	14	57		IV.*	Sh.	In.		19	41		I.	Tr.	In.		23	19	24	II.	Ec.	Dis.
	19	39		IV.	Sh.	Eg.		21	37		I.	Sh.	Eg.	23	2	32		II.	Ec.	Re.
	20	42		IV.	Tr.	In.		22	2		I.	Tr.	Eg.		10	8		I*	Sh.	In.
3	1	34		IV.	Tr.	Eg.	13	16	27	32	I*	Ec.	Dis.		10	17		I*	Tr.	In.
	1	36	54	I.	Ec.	Dis.		19	8		I.	Ec.	Re.		12	29		I*	Sh.	Eg.
	4	32		I.	Ec.	Re.	14	1	34		II.	Sh.	In.		12	37		I*	Tr.	Eg.
	9	41		II.*	Sh.	In.		2	18		II.	Tr.	In.	24	7	18	34	I*	Ec.	Dis.
	10	55		II.*	Tr.	In.		4	30		II.	Sh.	Eg.		9	44		I*	Ec.	Re.
	12	38		II.*	Sh.	Eg.		5	15		II.	Tr.	Eg.		17	26		II.*	Sh.	In.
	13	52		II.*	Tr.	Eg.		13	46		I*	Sh.	In.		17	39		II.*	Tr.	In.
	22	55		I.	Sh.	In.		14	7		I*	Tr.	In.		20	23		II.	Sh.	Eg.
	23	31		I.	Tr.	In.		16	6		I*	Sh.	Eg.		20	36		II.	Tr.	Eg.
4	1	15		I.	Sh.	Eg.		16	28		I*	Tr.	Eg.	25	4	37		I.	Sh.	In.
	1	51		I.	Tr.	Eg.		21	0		III.	Sh.	In.		4	43		I.	Tr.	In.
	2	55	14	III.	Ec.	Dis.		22	24		III.	Tr.	In.		6	57		I*	Sh.	Eg.
	8	58		III*	Ec.	Re.	15	0	40		III.	Sh.	Eg.		7	3		I*	Tr.	Eg.
	20	5	20	I.	Ec.	Dis.		2	6		III.	Tr.	Eg.		14	50	10	III*	Ec.	Dis.
	22	58		I	Ec.	Re.		10	56	4	I*	Ec.	Dis.		18	49		III.	Ec.	Re.
5	4	50	30	II.	Ec.	Dis.		13	34		I*	Ec.	Re.	26	1	47	7	I.	Ec.	Dis.
	8	54		II.*	Ec.	Re.		20	43	59	II.	Ec.	Dis.		4	10		I.	Ec.	Re.
	17	23		I*	Sh.	In.	16	0	18		II.	Ec.	Re.		12	36	54	II.*	Ec.	Dis.
	17	57		I*	Tr.	In.		8	14		I*	Sh.	In.		15	39		II.*	Ec.	Re.
	19	44		I.	Sh.	Eg.		8	33		I*	Tr.	In.		23	6		I.	Sh.	In.
	20	17		I	Tr.	Eg.		10	34		I*	Sh.	Eg.		23	9		I.	Tr.	In.
6	14	33	44	I*	Ec.	Dis.		10	54		I*	Tr.	Eg.	27	1	26		I.	Sh.	Eg.
	17	24		I*	Ec.	Re.	17	5	24	31	I.	Ec.	Dis.		1	29		I.	Tr.	Eg.
	22	59		II.	Sh.	In.		8	0		I*	Ec.	Re.		18	30	31	IV*	Ec.	Dis.
7	0	3		II	Tr.	In.		14	51		II.*	Sh.	In.		20	15	37	I.	Ec.	Dis.
	1	55		II.	Sh.	Eg.		15	25		II.*	Tr.	In.		22	36		I.	Ec.	Re.
	3	0		II.	Tr.	Eg.		17	47		II.*	Sh.	Eg.		23	34		IV.	Ec.	Re.
	11	52		I*	Sh.	In.		18	22		II.*	Tr.	Eg.	28	6	44		II.*	Sh.	In.
	12	23		I*	Tr.	In.	18	2	43		I.	Sh.	In.		6	46		II.*	Tr.	In.
	14	12		I*	Sh.	Eg.		2	59		I.	Tr.	In.		9	40		II.*	Sh.	Eg.
	14	44		I*	Tr.	Eg.		5	3		I.	Sh.	Eg.		9	43		II.*	Tr.	Eg.
	17	0		III.*	Sh.	In.		5	20		I.	Tr.	Eg.		17	34		I*	Sh.	In.
	19	6		III.	Tr.	In.		10	51	31	III.*	Ec.	Dis.		17	35		I*	Tr.	In.
	20	41		III.	Sh.	Eg.		15	33		III.*	Ec.	Re.		19	54		I.	Sh.	Eg.
	22	48		III.	Tr.	Eg.		23	53	2	I.	Ec.	Dis.		19	55		I.	Tr.	Eg.
8	9	2	13	I*	Ec.	Dis.	19	2	26		I.	Ec.	Re.	29	4	56		III.	Tr.	In.
	11	50		I*	Ec.	Re.		8	55		IV.*	Sh.	In.		4	57		III.	Sh.	In.
	18	8	32	II.*	Ec.	Dis.		10	1	28	II.*	Ec.	Dis.		8	38		III.*	Tr.	Eg.
	22	2		II.	Ec.	Re.		11	6		IV.*	Tr.	In.		8	38		III.*	Sh.	Eg.
9	6	20		I.	Sh.	In.		13	25		II.*	Ec.	Re.		14	44	14	I*	Ec.	Dis.
	6	49		I.	Tr.	In.		13	40		IV.*	Sh.	Eg.		17	1		I*	Ec.	Re.
	8	40		I*	Sh.	Eg.		15	57		IV.*	Tr.	Eg.	30	1	49		II.	Ec.	Dis.
	9	10		I*	Tr.	Eg.		21	11		I.	Sh.	In.		4	46	19	II.	Ec.	Re.
10	3	30	38	I.	Ec.	Dis.		21	25		I.	Tr.	In.		12	1		I*	Tr.	In.
	6	16		I.	Ec.	Re.		23	31		I.	Sh.	Eg.		12	3		I*	Sh.	In.
	12	16		II.*	Sh.	In.		23	45		I.	Tr.	Eg.		14	21		I*	Tr.	Eg.
	13	11		II.*	Tr.	In.	20	18	21	30	I*	Ec.	Dis.		14	23		I*	Sh.	Eg.
	15	12		II.*	Sh.	Eg.		20	52		I.	Ec.	Re.		14	23		I*	Sh.	Eg.
	16	7		II.*	Tr.	Eg.	21	4	9		I.	Ec.	Re.	31	9	7		I*	Ec.	Re.
11	0	29	18	IV.	Ec.	Dis.		4	32		II.	Sh.	In.		11	28	27	I*	Ec.	Re.
	0	49		I.	Sh.	In.		7	5		II.	Tr.	In.		19	53		II.	Tr.	In.
	1	15		I.	Tr.	In.		7	29		II.*	Sh.	Eg.		20	2		II.	Sh.	In.
	3	9		I.	Sh.	Eg.		15	40		II.*	Tr.	Eg.		22	50		II.	Tr.	Eg.
	3	36		I.	Tr.	Eg.		15	51		I*	Sh.	In.		22	58		II.	Sh.	Eg.

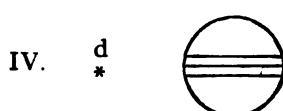
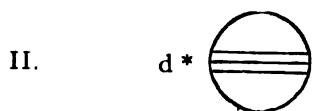
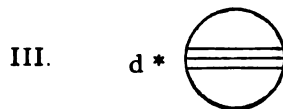
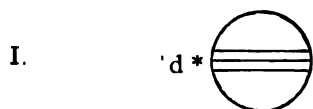
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc., denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

JANUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 13^h 0^m for an Inverting Telescope.

Day.	West.				East.			
1		3'		2	○	'1		4'
2		'3		1'	○	4'		'2
3	○ 2'		'3	4'	○	'1		
4		4'	'2	'1	○	'3		
5	4'				○	'21'		'3
6	4'			'1	○	2'		3'
7	○ 1' 4'		2'		○	3'		
8	'4		3'	'2	○	'1		
9		'43'		1'	○			'2
10		'3	'4		○ 2'	'1		
11			'1	2'	○	'3	'4	
12					○	'2	1'	'3
13				'1	○	2'	3'	'4
14			2'		○ 1'	3'		'4
15			3' 2'		○			4' 1' ●
16		3'		1'	○	'2		4'
17		'3			○	2'	'1	4'
18			1'	2'	○		4'	'3 ●
19	○ 4'				○	1'	'3	'2 ●
20		4'	'1		○	2'	3'	
21		4'		2'	○	1'	3'	
22	4'		'2	3'	○			'1 ●
23	4'		3'		○	'2		
24	'4		'3		○	'1		
25		'4	2'	1'	'3	○		
26		'4			○	'1	'3	'2 ●
27			'1	'4	○	2'	3'	
28			2'		○	1'	'4	3'
29			'2	3'	'1	○		'4
30	○ 1'		3'		○	'2		'4
31		'3			○	'1	2'	'4

WASHINGTON MEAN TIME.

FEBRUARY.

d	h	m	s				d	h	m	s				d	h	m	s				
1	6	27		I.*	Tr.	In.	11	2	20	8	I.	Ec.	Re.	20	17	13		I.*	Tr.	In.	
	6	31		I.*	Sh.	In.		11	15		II.*	Tr.	In.		17	46		I.	Sh.	In.	
	8	47		I.*	Tr.	Eg.		11	56		II.*	Sh.	In.		19	33		I.	Tr.	Eg.	
	8	51		I.*	Sh.	Eg.		14	11		II.*	Tr.	Eg.		20	6		I.	Sh.	Eg.	
	18	22		III.*	Oc.	Dis.		14	52		II.*	Sh.	Eg.	21	14	20		I.*	Oc.	Dis.	
	22	21	36	III.	Ec.	Re.		21	2		I.	Tr.	In.		15	36		IV.*	Tr.	In.	
2	3	33		I.	Oc.	Dis.		21	23		I.	Sh.	In.		17	12	13		I.	Ec.	Re.
	5	57	4	I.*	Ec.	Re.		23	22		I.	Tr.	Eg.		20	25		IV.	Tr.	Eg.	
	14	56		II.*	Oc.	Dis.		23	43		I.	Sh.	Eg.		20	54		IV.	Sh.	In.	
	18	3	45	II.*	Ec.	Re.	12	11	27		III.*	Tr.	In.	22	1	43		IV.	Sh.	Eg.	
3	0	52		I.	Tr.	In.		12	54		III.*	Sh.	In.		2	40		II.	Tr.	In.	
	1	0		I.	Sh.	In.		15	9		III.*	Tr.	Eg.		3	50		II.	Sh.	In.	
	3	13		I.	Tr.	Eg.		16	36		III.*	Sh.	Eg.		5	36		II.	Tr.	Eg.	
	3	20		I.	Sh.	Eg.		18	9		I.	Oc.	Dis.		6	46		II.*	Sh.	Eg.	
	21	59		I.	Oc.	Dis.		20	48	50	I.	Ec.	Re.		11	39		I.*	Tr.	In.	
4	0	25	38	I.	Ec.	Re.	13	6	18		II.*	Oc.	Dis.		12	14		I.*	Sh.	In.	
	9	1		II.*	Tr.	In.		8	50		IV.*	Oc.	Dis.		13	59		I.*	Tr.	Eg.	
	9	20		II.*	Sh.	In.		9	56	39	II.*	Ec.	Re.		14	35		I.*	Sh.	Eg.	
	11	57		II.*	Tr.	Eg.		15	28		I.*	Tr.	In.	23	4	17		III.	Oc.	Dis.	
	12	16		II.*	Sh.	Eg.		15	51		I.*	Sh.	In.		8	47		I.*	Oc.	Dis.	
	19	18		I.	Tr.	In.		17	12	57	IV.*	Ec.	Re.		10	20	24	III.*	Ec.	Re.	
	19	28		I.	Sh.	In.		17	48		I.	Tr.	Eg.		11	40	58	I.*	Ec.	Re.	
	21	38		I.	Tr.	Eg.		18	11		I.	Sh.	Eg.		21	42		II.	Oc.	Dis.	
	21	48		I.	Sh.	Eg.	14	12	35		I.*	Oc.	Dis.	24	1	49	15	II.	Ec.	Re.	
5	1	14		IV.	Tr.	In.		15	17	29	I.*	Ec.	Re.		6	6		I.	Tr.	In.	
	2	54		IV.	Sh.	In.	15	0	23		II.	Tr.	In.		6	43		I.*	Sh.	In.	
	6	5		IV.*	Tr.	Eg.		1	14		II.	Sh.	In.		8	26		I.*	Tr.	Eg.	
	7	41		IV.*	Sh.	Eg.		3	19		II.	Tr.	Eg.		9	3		I.*	Sh.	Eg.	
	8	11		III.*	Tr.	In.		4	10		II.	Sh.	Eg.	25	3	13		I.	Oc.	Dis.	
	8	55		III.*	Sh.	In.		9	54		I.*	Tr.	In.		6	9	37	I.	Ec.	Re.	
	11	53		III.*	Tr.	Eg.		10	20		I.*	Sh.	In.		15	49		II.*	Tr.	In.	
	12	37		III.*	Sh.	Eg.		12	15		I.*	Tr.	Eg.		17	8		II.*	Sh.	In.	
	16	25		I.*	Oc.	Dis.		12	40		I.*	Sh.	Eg.		18	45		II.	Tr.	Eg.	
	18	54	18	I.	Ec.	Re.	16	0	56		III.	Oc.	Dis.		20	5		II.	Sh.	Eg.	
6	4	3		II.	Oc.	Dis.		6	20	49	III.*	Ec.	Re.	26	0	32		I.	Tr.	In.	
	7	21	30	II.*	Ec.	Re.		7	1		I.*	Oc.	Dis.		1	12		I.	Sh.	In.	
	13	44		I.*	Tr.	In.		9	46	11	I.*	Ec.	Re.		2	52		I.	Tr.	Eg.	
	13	57		I.*	Sh.	In.		19	26		II.	Oc.	Dis.		3	32		I.	Sh.	Eg.	
	16	4		I.*	Tr.	Eg.		23	14	7	II.	Ec.	Re.		18	8		III.	Tr.	In.	
	16	17		I.*	Sh.	Eg.	17	4	20		I.	Tr.	In.		20	52		III.	Sh.	In.	
7	10	51		I.*	Oc.	Dis.		4	48		I.	Sh.	In.		21	40		I.	Oc.	Dis.	
	13	22	53	I.*	Ec.	Re.		6	41		I.*	Tr.	Eg.		21	50		III.	Tr.	Eg.	
	22	8		II.	Tr.	In.		7	9		I.*	Sh.	Eg.		27	0	34	III.	Sh.	Eg.	
	22	38		II.	Sh.	In.	18	1	28		I.	Oc.	Dis.		0	38	24	I.	Ec.	Re.	
8	1	4		II.	Tr.	Eg.		4	14	48	I.	Ec.	Re.		10	51		II.*	Oc.	Dis.	
	1	34		II.	Sh.	Eg.		13	31		II.*	Tr.	In.		15	6	51	II.*	Ec.	Re.	
	8	10		I.*	Tr.	In.		14	32		II.*	Sh.	In.		18	58		I.	Tr.	In.	
	8	26		I.*	Sh.	In.		16	27		II.*	Tr.	Eg.		19	40		I.	Sh.	In.	
	10	30		I.*	Tr.	Eg.		17	28		II.	Sh.	Eg.		21	19		I.	Tr.	Eg.	
	10	46		I.*	Sh.	Eg.		22	47		I.	Tr.	In.		22	0		I.	Sh.	Eg.	
	21	38		III.	Oc.	Dis.		23	17		I.	Sh.	In.	28	16	6		I.*	Oc.	Dis.	
9	2	21	26	III.	Ec.	Re.	19	1	7		I.	Tr.	Eg.		19	7	6	I.	Ec.	Re.	
	5	17		I.	Oc.	Dis.		1	37		I.	Sh.	Eg.	29	4	58		II.	Tr.	In.	
	7	51	33	I.*	Ec.	Re.		14	46		III.*	Tr.	In.		6	26		II.*	Sh.	In.	
	17	10		II.*	Oc.	Dis.		16	53		III.*	Sh.	In.		7	55		II.*	Tr.	Eg.	
	20	38	57	II.	Ec.	Re.		18	28		III.	Tr.	Eg.		9	23		II.*	Sh.	Eg.	
10	2	36		I.	Tr.	In.		19	54		I.	Oc.	Dis.		13	25		I.*	Tr.	In.	
	2	54		I.	Sh.	In.		20	35		III.	Sh.	Eg.		14	9		I.*	Sh.	In.	
	4	56		I.	Tr.	Eg.		22	43	33	I.	Ec.	Re.		15	45		I.*	Tr.	Eg.	
	5	14		I.	Sh.	Eg.	20	8	34		II.*	Oc.	Dis.		16	29		I.*	Sh.	Eg.	
	23	43		I.	Oc.	Dis.		12	31	46	II.*	Ec.	Re.		23	24		IV.	Oc.	Dis.	

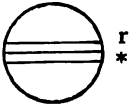
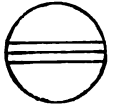
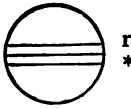
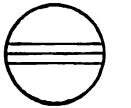
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

FEBRUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.		III.	
II.		IV.	

Configurations at 12^h 0^m for an Inverting Telescope.

Day.	West.	East.
1	2° 1° 3' ○	4°
2	.2 ○	'1 '3 4°
3	1° ○	'2 4° 3'
4	2° ○	1° 4° 3'
5	'2 4° 1° 3' ○	
6	3° 4° ○	1° '2
7	4° '3 ○	2° '1 ●
8	4° 2° '3 1° ○	
9	'4 '2 ○	'1 '3
10	'4 1° ○	'2 '3
11	○ 2° '4	1° 3°
12	○ 3° 2° 4° '1 ○	
13	3° ○	1° 2° 4° ●
14	'3 '1 ○	2° '4
15	○ 1° 3° ○	'4
16	'2 ○	'1 '3 '4
17	1° ○	'2 '3 '4
18	○ 2° '1 3° 4°	
19	2° '1 ○ 3° 4°	
20	3° ○	1° 4° '2 ●
21	'3 '1 ○	4° 2°
22	○ 1° '3 4° 2° ○	
23	4° '2 ○	'1 '3
24	4° 1° ○	'2 '3
25	4° 2° '1 3° ○	
26	'4 2° 1° ○ 3°	
27	'4 3° ○	1° '2 ●
28	3° 4° '1 ○	2°
29	'3 '4 2° ○ 1°	

WASHINGTON MEAN TIME.

MARCH.

d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s		
1	4	13		IV.	11	6	26		I.	21	17	14		II.	21	17	14		Eg.	
	6	34	33	IV.*		7	21		I.*		18	49		I.		18	49		In.	
	7	40		III.*	12	1	3		III.		19	53		I.		19	53		In.	
	10	33		I.*		1	14		I.		21	9		I.		21	9		Eg.	
	11	17	15	IV.*		4	28	28	I.		22	14		I.		22	14		Eg.	
	13	35	52	I.*		4	45		III.		15	58		I.		15	58		Dis.	
	14	19	40	III.*		4	51		III.		18	16		III.		18	16		Dis.	
2	0	0		II.		8	34		III.*		19	21	18	I.		19	21		Re.	
	4	24	20	II.		15	31		II.*		21	58		III.		21	58		Re.	
	7	52		I.*		20	16	55	II.		22	44	47	III.		22	44		Dis.	
	8	38		I.*		22	33		I.		23	2	18	35	III.		23	2		Re.
	10	12		I.*		23	30		I.		7	6		II.*		7	6		Dis.	
	10	58		I.*	13	0	53		I.		12	9	21	II.*		12	9		Re.	
3	4	59		I.		1	50		I.		13	16		I.*		13	16		In.	
	8	4	34	I.*		19	41		I.		14	22		I.*		14	22		In.	
	18	8		II.		22	57	13	I.		15	36		I.		15	36		Eg.	
	19	45		II.		9	41		II.*		16	42		I.		16	42		Eg.	
	21	5		II.		11	40		II.*		10	25		I.*		10	25		Dis.	
	22	41		II.		12	37		II.*		13	50	3	I.*		13	50		Re.	
4	2	18		I.		14	36		II.*		1	19		II.		1	19		In.	
	3	6		I.		17	0		I.		3	36		II.		3	36		In.	
	4	38		I.		17	58		I.		4	16		II.		4	16		Eg.	
	5	26		I.		19	20		I.		6	33		II.		6	33		Eg.	
	21	34		III.		20	19		I.		7	44		I.*		7	44		In.	
	23	26		I.	15	14	8		I.*		8	50		I.*		8	50		In.	
5	0	52		III.		14	40		III.*		10	4		I.*		10	4		Eg.	
	1	16		III.		17	26	3	I.		11	11		I.*		11	11		Eg.	
	2	33	22	I.		18	21		III.		22	27		IV.		22	27		In.	
	4	34		III.		18	45	4	III.		3	14		IV.		3	14		Eg.	
	13	10		II.*		22	18	45	III.		4	53		I.		4	53		Dis.	
	17	41	54	II.	16	4	42		II.		8	16		III.*		8	16		In.	
	20	45		I.		9	34	24	II.*		8	18	56	I.*		8	18		Re.	
	21	35		I.		11	27		I.*		8	55		IV.*		8	55		In.	
	23	5		I.		12	27		I.*		11	58		III.*		11	58		Eg.	
	23	55		I.		13	47		I.*		12	50		III.*		12	50		In.	
6	17	53		I.		14	47		I.*		13	47		IV.*		13	47		Eg.	
	21	2	6	I.	17	8	36		I.*		16	32		III.		16	32		Eg.	
7	7	18		II.*		11	54	46	I.*		20	19		II.		20	19		Dis.	
	9	3		II.*		14	47		IV.*		27	1	26	49	II.		27	1		Re.
	10	15		II.*		19	34		IV.		2	11		I.		2	11		In.	
	11	59		II.*		22	53		II.		3	19		I.		3	19		In.	
	15	12		I.*	18	0	37	35	IV.		4	31		I.		4	31		Eg.	
	16	4		I.*		0	59		II.		5	40		I.		5	40		Eg.	
	17	32		I.		1	49		II.		23	21		I.		23	21		Dis.	
	18	24		I.		3	55		II.		28	2	47	44	I.		28	2		Re.
8	11	8		III.*		5	21	50	IV.		14	33		II.*		14	33		In.	
	12	20		I.*		5	54		I.		16	55		II.		16	55		In.	
	15	30	55	I.*		6	56		I.*		17	30		II.		17	30		Eg.	
	18	19	0	III.		8	14		I.*		19	51		II.		19	51		Eg.	
9	2	20		II.		9	16		I.*		20	39		I.		20	39		In.	
	6	35		IV.*	19	3	3		I.		21	48		I.		21	48		In.	
	6	59	23	II.*		4	38		III.		22	59		I.		22	59		Eg.	
	9	39		I.*		6	23	40	I.		0	8		I.		0	8		Eg.	
	10	32		I.*		8	19		I.		17	49		I.		17	49		Dis.	
	11	23		IV.*		8	51		III.*		21	16	36	I.		21	16		Re.	
	11	59		I.*		12	33		III.*		21	58		III.		21	58		Dis.	
	12	52		I.*		17	54		II.		30	1	40	III.		30	1		Re.	
	14	54		IV.*		22	51	53	II.		2	45	11	III.		2	45		Dis.	
	19	45		IV.	20	0	21		I.		6	19	5	III.		6	19		Re.	
10	6	47		I.*		1	24		I.		9	32		II.*		9	32		Dis.	
	9	59	37	I.*		2	41		I.		14	44	16	II.		14	44		Re.	
	20	29		II.		3	45		I.		15	6		I.		15	6		In.	
	22	22		II.		21	30		I.		16	17		I.		16	17		In.	
	23	26		II.	21	0	52	26	I.		17	27		I.		17	27		Eg.	
11	1	18		II.		12	6		II.*		18	37		I.		18	37		Eg.	
	4	6		I.		14	17		II.*		31	12	16	I.*		31	12		Dis.	
	5	1		I.		15	2		II.*		15	45	22	I.		15	45		Re.	

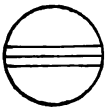
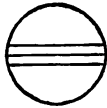
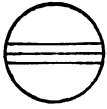
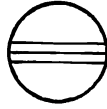
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

MARCH.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.		r *	III.		d * r *
II.		r *	IV.		d * r *

Configurations at 11^h 0^m for an Inverting Telescope.

Day.	West.	East.
1	'2 ○	'1 ● '3 ● '4 ●
2	1' ○	'2 '3 '4
3	○	'1 2' 3' '4
4	2' 1' ○	3' '4
5	3' '2 ○	'1 4'
6	3' '1 ○	'2 4'
7	'3 2' ○	1' 4'
8	'2 1' 3' ○	4'
9	○ 1' ○ 4'	'2 '3
10	4' ○	'1 2' 3'
11	4' 2' 1' ○	3'
12	4' 3' '2 ○	'1
13	4' 3' '1 ○	'2
14	○ 2' '4 '3	1'
15	'4 '2 1' 3' ○	
16	'4 ○	1' '2 '3
17	'4 ○	2' '3 '1 ●
18	2' 1' ○	'4 3'
19	'2 3' ○	'1 '4
20	3' 1' ○	'2 '4
21	'3 ○	2' 1' '4
22	2' 1' 3' ○	4'
23	○	1' '3 4' '2 ●
24	○	2' 4' 3' '1 ●
25	2' 1' ○	4' 3'
26	○ 3' '2 4' ○	'1
27	4' 3' 1' ○	'2
28	4' '3 ○	2' '1
29	4' 2' '3 '1 ○	
30	'4 ○	1' '3 '2 ●
31	'4 '1 ○	'2 '3

WASHINGTON MEAN TIME.

APRIL.

d	h	m	s				d	h	m	s				d	h	m	s			
1	3	48		II.	Tr.	In.	11	3	5		I.	Oc.	Dis.	20	17	30	34	IV.	Ec.	Re.
	6	14		II.	Sh.	In.		6	38	29	I.	Ec.	Re.		18	18	42	III.	Ec.	Re.
	6	45		II.	Tr.	Eg.		15	17		IV.	Tr.	In.		20	44		I.	Tr.	In.
	9	10		II.*	Sh.	Eg.		19	36		II.	Tr.	In.		22	1		I.	Sh.	In.
	9	34		I.*	Tr.	In.		20	4		IV.	Tr.	Eg.		22	28	43	II.	Ec.	Re.
	10	45		I.*	Sh.	In.		22	10		II.	Sh.	In.		23	4		I.	Tr.	Eg.
	11	54		I.*	Tr.	Eg.		22	32		II.	Tr.	Eg.		21	0	21	I.	Sh.	Eg.
	13	6		I.*	Sh.	Eg.	12	0	22		I.	Tr.	In.		17	56		I.	Oc.	Dis.
2	6	44		I.	Oc.	Dis.		1	6		II.	Sh.	Eg.		21	31	38	I.	Ec.	Re.
	10	14	16	I.*	Ec.	Re.		1	37		I.	Sh.	In.		22	11	28	II.*	Tr.	In.
	11	59		III.*	Tr.	In.		2	42		I.	Tr.	Eg.		14	6		II.	Sh.	In.
	15	40		III.	Tr.	Eg.		2	56		IV.	Sh.	In.		14	25		II.	Tr.	Eg.
	16	49		III.	Sh.	In.		3	58		I.	Sh.	Eg.		15	13		I.	Tr.	In.
	20	32		III.	Sh.	Eg.		7	50		IV.*	Sh.	Eg.		16	30		I.	Sh.	In.
	22	46		II.	Oc.	Dis.		21	34		I.	Oc.	Dis.		17	3		II.	Sh.	Eg.
3	4	1	42	II.	Ec.	Re.	13	1	7	24	I.	Ec.	Re.		17	33		I.	Tr.	Eg.
	4	2		I.	Tr.	In.		5	35		III.	Oc.	Dis.		18	50		I.	Sh.	Eg.
	5	14		I.	Sh.	In.		9	16		III.*	Oc.	Re.		23	12	25	I.	Oc.	Dis.
	6	22		I.	Tr.	Eg.		10	45	2	III.*	Ec.	Dis.		16	0	33	I.	Ec.	Re.
	7	7		IV.*	Oc.	Dis.		14	19	4	III.	Ec.	Re.		23	37		III.	Tr.	In.
	7	34		I.*	Sh.	Eg.		14	31		II.	Oc.	Dis.		24	3	18	III.	Tr.	Eg.
	11	54		IV.*	Oc.	Re.		18	50		I.	Tr.	In.		4	48		III.	Sh.	In.
	18	40	40	IV.	Ec.	Dis.		19	53	57	II.	Ec.	Re.		6	21		II.	Oc.	Dis.
	23	26	8	IV.	Ec.	Re.		20	6		I.	Sh.	In.		8	31		III.*	Sh.	Eg.
4	1	12		I.	Oc.	Dis.		21	11		I.	Tr.	Eg.		9	41		I.*	Tr.	In.
	4	43	5	I.	Ec.	Re.		22	26		I.	Sh.	Eg.		10	58		I.*	Sh.	In.
	17	4		II.	Tr.	In.	14	16	2		I.	Oc.	Dis.		11	46	4	II.*	Ec.	Re.
	19	32		II.	Sh.	In.		19	36	11	I.	Ec.	Re.		12	2		I.*	Tr.	Eg.
	20	0		II.	Tr.	Eg.		16	8	53	II.*	Tr.	In.		13	19		I.	Sh.	Eg.
	22	28		II.	Sh.	Eg.		11	29		II.*	Sh.	In.		25	6	54	I.	Oc.	Dis.
	22	30		I.	Tr.	In.		11	49		II.*	Tr.	Eg.		10	29	22	I.*	Ec.	Re.
	23	43		I.	Sh.	In.		13	19		I.*	Tr.	In.		26	0	47	II.	Tr.	In.
5	0	50		I.	Tr.	Eg.		14	25		II.	Sh.	Eg.		3	25		II.	Sh.	In.
	2	3		I.	Sh.	Eg.		14	35		I.	Sh.	In.		3	44		II.	Tr.	Eg.
	19	40		I.	Oc.	Dis.		15	39		I.	Tr.	Eg.		4	10		I.	Tr.	In.
	23	11	59	I.	Ec.	Re.		16	55		I.	Sh.	Eg.		5	27		I.	Sh.	In.
6	1	44		III.	Oc.	Dis.	16	10	30		I.*	Oc.	Dis.		6	21		II.	Sh.	Eg.
	5	26		III.	Oc.	Re.		14	5	6	I.	Ec.	Re.		6	30		I.	Tr.	Eg.
	6	45	4	III.	Ec.	Dis.		19	39		III.	Tr.	In.		7	48		I.*	Sh.	Eg.
	10	19	2	III.*	Ec.	Re.		23	21		III.	Tr.	Eg.		27	1	23	I.	Oc.	Dis.
	16	58		II.*	Oc.	Dis.	17	0	48		III.	Sh.	In.		4	58	17	I.	Ec.	Re.
	17	19	8	I.	Tr.	In.		3	47		II.	Oc.	Dis.		13	29		III.	Oc.	Dis.
	17	11		II.	Ec.	Re.		4	31		III.	Sh.	Eg.		17	10		III.	Oc.	Re.
	18	11		I.	Sh.	In.		7	47		I.*	Tr.	In.		18	44	14	III.	Ec.	Dis.
	19	18		I.	Tr.	Eg.		9	4		I.*	Sh.	In.		19	38		II.	Oc.	Dis.
	20	32		I.	Sh.	Eg.		9	11	19	II.*	Ec.	Re.		22	18	18	III.	Ec.	Re.
7	14	9		I.	Oc.	Dis.		10	7		I.*	Tr.	Eg.		22	39		I.	Tr.	In.
	17	40	46	I.	Ec.	Re.		11	24		I.*	Sh.	Eg.		23	56		I.	Sh.	In.
8	6	20		II.	Tr.	In.	18	4	59		I.	Oc.	Dis.		28	0	59	I.	Tr.	Eg.
	8	51		II.*	Sh.	In.		8	33	55	I.*	Ec.	Re.		1	3	27	II.	Ec.	Re.
	9	16		II.*	Tr.	Eg.		22	10		II.	Tr.	In.		2	16		I.	Sh.	Eg.
	11	26		I.*	Tr.	In.	19	0	47		II.	Sh.	In.		9	2		IV.*	Tr.	In.
	11	47		II.*	Sh.	Eg.		1	7		II.	Tr.	Eg.		13	50		IV.	Tr.	Eg.
	12	40		I.*	Sh.	In.		2	16		I.	Tr.	In.		19	52		I.	Oc.	Dis.
	13	46		I.*	Tr.	Eg.		3	32		I.	Sh.	In.		20	57		IV.	Sh.	In.
	15	0		I.	Sh.	Eg.		3	44		II.	Sh.	Eg.		23	27	4	I.	Ec.	Re.
9	8	37		I.*	Oc.	Dis.		4	36		I.	Tr.	Eg.		29	1	52	IV.	Sh.	Eg.
	12	9	40	I.*	Ec.	Re.		5	53		I.	Sh.	Eg.		14	6		II.	Tr.	In.
	15	47		III.	Tr.	In.		23	28		I.	Oc.	Dis.		16	44		II.	Sh.	In.
	19	28		III.	Tr.	Eg.	20	0	27		IV.	Oc.	Dis.		17	3		II.	Tr.	Eg.
	20	48		III.	Sh.	In.		3	2	50	I.	Ec.	Re.		17	8		I.	Tr.	In.
10	0	31		III.	Sh.	Eg.		5	14		IV.	Oc.	Re.		18	24		I.	Sh.	In.
	1	15		II.	Oc.	Dis.		9	30		III.*	Oc.	Dis.		19	28		I.	Tr.	Eg.
	5	54		I.	Tr.	In.		12	44	11	IV.*	Ec.	Dis.		19	40		II.	Sh.	Eg.
	6	36	32	II.	Ec.	Re.		13	11		III.*	Oc.	Re.		20	45		I.	Sh.	Eg.
	7	9		I.*	Sh.	In.		14	44	38	III.	Ec.	Dis.		30	14	21	I.	Oc.	Dis.
	8	14		I.*	Tr.	Eg.		17	4		II.	Oc.	Dis.		17	56	0	I.	Ec.	Re.
	9	29		I.*	Sh.	Eg.														

NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

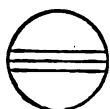
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

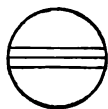
APRIL.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

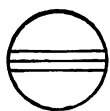
I.

r
*

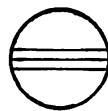
III.

d
*r
*

II.

r
*

IV.

d
*r
**Configurations at 10^h 30^m for an Inverting Telescope.*

Day.	West.			East.		
1	○ 1'	'4	2'	○	3'	
2		'4	'2	○ 3'	'1	
3		3'	1'	○	'2	'4 ●
4		'3		○	'1	'4
5		'3	'1	○		'4
6			'2	○	'1	'4
7			'1	○	'2	'3
8			2'	○ 1'	3'	4'
9		'2		○ 3'		4'
10		3'	1'	○	'2	4'
11		3'		○	4'	'1 2'
12		'3	2' 4' 1'	○		
13		4'	'2	○	'3	1'
14	4'		'1	○	'2	'3
15	○ 2' 4'			○	1'	3'
16	'4	'2	'1	○	3'	
17	'4	3'	1'	○	'2	
18	'4	'3		○	'1	2'
19		'3	'4 1'	○		
20		'2		○	'4	'1
21		'1		○	'2	'3 4'
22				○	2'	1'
23		'2	'1	○	3'	'4
24	○ 1'	3'		○		4' 2' ●
25		3'		○	'1	2'
26		'3	2' 1'	○		4'
27		'2	'3	○	'1	4'
28	○ 4'	'1		○	'2	'3
29		4'		○	2'	1'
30		4'	2'	○	3'	

WASHINGTON MEAN TIME.

MAY.

d	h	m	s		d	h	m	s		d	h	m	s	
1	3	37		III.	11	8	49	10	I.*	21	20	13		I.
	7	19		III.		21	38		III.		23	42	14	I.
	8	47		III.*	12	0	53		II.	22	16	0		III.
	8	56		II.*		1	20		III.		16	53		II.
	11	36		I.*		2	31		I.		17	27		I.
	12	30		III.*		2	44	7	III.		18	37		I.
	12	53		I.		3	45		I.		19	42		III.
	13	57		I.		4	51		I.		19	47		I.
	14	20	47	II.		6	6		I.		20	45		III.
	15	14		I.		6	12	48	II.		20	58		I.
2	8	50		I.*		6	18	10	III.		22	4	45	II.
	12	24	49	I.*		23	45		I.	23	0	28		III.
3	3	26		II.	13	3	17	56	I.		13	37		IV.
	6	3		II.		19	28		II.		14	43		I.
	6	5		I.		21	0		I.		18	11	2	I.
	6	23		II.		22	0		II.		18	26		IV.
	7	22		I.		22	14		I.		19	33	51	IV.
	8	26		I.*		22	25		II.	24	0	50	8	IV.
	8	59		II.*		23	20		I.		11	38		II.
	9	42		I.*		23	20		I.		11	56		I.
4	3	19		I.	14	0	34		II.		13	6		I.
	6	53	44	I.		0	56		I.		13	56		II.
	17	32		III.		18	15		I.		14	17		I.
	21	13		III.		21	46	51	I.		14	30		II.
	22	15		II.	15	3	35		IV.		15	26		I.
	22	44	11	III.		8	23		IV.*		15	30		II.
5	0	34		I.		11	49		III.		16	52		II.
	1	50		I.		14	12		II.	25	9	12		I.*
	2	18	16	III.		14	58		IV.		12	39	55	I.
	3	55	8	I.		15	30		I.	26	6	2		III.
	4	11		I.		15	31		III.		6	13		II.
	21	48		I.		16	43		I.		6	26		I.
6	1	22	31	I.		16	46		III.		7	35		I.
	16	46		II.		17	50		I.		8	46		I.*
	18	39		IV.		19	3		I.		9	44		III.*
	19	4		I.		19	30	8	II.		9	55		I.*
	19	22		II.		19	53		IV.		10	44	29	III.*
	19	43		II.		20	29		III.		11	22	4	II.
	20	19		I.	16	12	44		I.		14	18	25	III.
	21	24		I.		16	15	40	I.	27	3	42		I.
	22	18		II.	17	8	49		II.*		7	8	39	I.
	22	40		I.		9	59		I.*	28	0	56		I.
	23	27		IV.		11	11		I.*		0	56		II.
7	6	47	45	IV.		11	18		II.*		2	4		I.
	11	34	44	IV.*		11	46		II.		3	15		II.
	16	18		I.		12	19		I.		3	16		I.
	19	51	26	I.		13	32		I.		3	52		II.
8	7	42		III.*		14	14		II.		4	24		I.
	11	23		III.*	18	7	14		I.		6	11		II.
	11	34		II.*		10	44	34	I.*		22	12		I.
	12	47		III.	19	1	49		III.	29	1	37	33	I.
	13	33		I.		3	32		II.		19	25		I.
	14	48		I.		4	28		I.		19	34		II.
	15	53		I.		5	31		III.		20	13		III.
	16	30		III.		5	40		I.		20	32		I.
	16	55	28	II.		6	44	37	III.		21	45		I.
	17	8		I.		6	48		I.		22	53		I.
9	10	47		I.*		8	0		I.*		23	55		III.
	14	20	15	I.		8	47	26	II.*	30	0	39	23	II.
10	6	7		II.		10	18	37	III.*		0	44		III.
	8	2		I.*	20	1	44		I.		4	27		III.
	8	41		II.*		5	13	20	I.		16	42		I.
	9	4		II.*		22	11		II.		20	6	20	I.
	9	17		I.*	21	0	9		I.	31	13	55		I.
	10	22		I.*		0	37		II.		14	19		II.
	11	37		II.*		1	8		II.		15	1		I.
	11	37		I.*		1	18		I.		16	15		I.
11	5	16		I.		2	29		I.		17	33		II.
						3	33		II.		17	41		I.
											19	39		II.
											22	46		IV.

NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

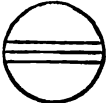
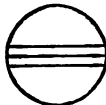
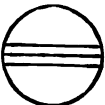
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

[Eph 08]

WASHINGTON MEAN TIME.

MAY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.		r *	III.		d * r *
II.		r *	IV.		d * r *

Configurations at 9^h 30^m for an Inverting Telescope.

Day.	West.			East.		
1	4°		3°	○	1°	'2 ●
2	4°		3°	○	2°	'1 ●
3	'4		'3	○	2° 1'	
4	'4		'2 '3	○	'1	
5		'4	1°	○	'2 '3	
6			'4	○	2° 1'	'3
7			2° '1	○	3°	'4 ●
8	○ 3°		'2	○	1°	'4
9		3°	'1	○	'2	'4
10	○ 1°	'3	2°	○		'4
11			'2 '3	○	'1	4°
12			1°	○	'3	4°
13				○	'12°	'3 4°
14			2° '1	○	4°	3°
15			'2 4°	○	3°	1°
16		4° 3°	'1	○	'2	
17	○ 2°	4° '3		○	1°	
18	4°		'3	○		'1 ●
19	4°		1°	○	'2	'3 ●
20	'4			○	'1 2°	'3
21	'4		1°	○	3°	
22		'4	'2	○	3° 1'	
23			3° '1 '4	○	'2	
24		3°		○	'1	'4
25		'32°		○		'4
26			1°	○		'4 '2 ● '3 ●
27				○	'1 2° '3	'4
28			1°	○	3°	4°
29		'2		○	'1	4°
30		3° '1		○	'2	4°
31		3°		○	'1 4°	

WASHINGTON MEAN TIME.

JUNE.

d	h	m	s				d	h	m	s				d	h	m	s			
1	3	37		IV.	Tr.	Eg.	11	5	53		I.	Sh.	In.	20	12	51		III.	Tr.	Eg.
	8	58		IV.*	Sh.	In.		6	28		II.	Tr.	In.		16	25		III.	Sh.	Eg.
	11	11		I.	Oc.	Dis.		7	14		I.	Tr.	Eg.		22	41		I.	Oc.	Dis.
	13	54		IV.	Sh.	Eg.		8	13		I.*	Sh.	Eg.	21	1	51	53	I.	Ec.	Re.
	14	35	13	I.	Ec.	Re.		8	30		-II.*	Sh.	In.		19	53		I.	Tr.	In.
2	8	24		I.*	Tr.	In.		9	25		II.*	Tr.	Eg.		20	45		I.	Sh.	In.
	8	55		II.*	Oc.	Dis.		11	26		II.	Sh.	Eg.		22	13		I.	Tr.	Eg.
	9	30		I.*	Sh.	In.	12	2	11		I.	Oc.	Dis.		22	40		II.	Tr.	In.
	10	17		III.*	Oc.	Dis.		5	28	2	I.	Ec.	Re.		23	5		I.	Sh.	Eg.
	10	45		I.	Tr.	Eg.		23	23		I.	Tr.	In.	22	0	26		II.	Sh.	In.
	11	50		I.	Sh.	Eg.	13	0	21		I.	Sh.	In.		1	37		II.	Tr.	Eg.
	13	56	40	II.	Ec.	Re.		1	1		II.	Oc.	Dis.		3	21		II.	Sh.	Eg.
	13	59		III.	Oc.	Re.		1	43		I.	Tr.	Eg.		17	11		I.	Oc.	Dis.
	14	44	19	III.	Ec.	Dis.		2	42		I.	Sh.	Eg.		20	20	42	I.	Ec.	Re.
	18	18	10	III.	Ec.	Re.		4	48		III.	Tr.	In.	23	14	23		I.	Tr.	In.
3	5	41		I.	Oc.	Dis.		5	48	36	II.	Ec.	Re.		15	13		I.	Sh.	In.
	9	3	58	I.*	Ec.	Re.		8	31		III.*	Tr.	Eg.		16	43		I.	Tr.	Eg.
4	2	54		I.	Tr.	In.		8	43		III.*	Sh.	In.		17	8		II.	Oc.	Dis.
	3	42		II.	Tr.	In.		12	26		III.	Sh.	Eg.		17	34		I.	Sh.	Eg.
	3	58		I.	Sh.	In.		20	41		I.	Oc.	Dis.		21	40	32	II.	Ec.	Re.
	5	14		I.	Tr.	Eg.		23	56	46	I.	Ec.	Re.		23	15		III.	Oc.	Dis.
	5	52		II.	Sh.	In.	14	17	53		I.	Tr.	In.	24	6	16	8	III.	Ec.	Re.
	6	19		I.	Sh.	Eg.		18	50		I.	Sh.	In.		11	41		I.	Oc.	Dis.
	6	38		II.	Tr.	Eg.		19	52		II.	Tr.	In.		14	49	23	I.	Ec.	Re.
	8	48		II.*	Sh.	Eg.		20	13		I.	Tr.	Eg.	25	8	53		I.*	Tr.	In.
5	0	11		I.	Oc.	Dis.		21	10		I.	Sh.	Eg.		9	42		I.	Sh.	In.
	3	32	50	I.	Ec.	Re.		21	48		II.	Sh.	In.		11	13		I.	Tr.	Eg.
	21	24		I.	Tr.	In.		22	49		II.	Tr.	Eg.		12	2		I.	Sh.	Eg.
	22	17		II.	Oc.	Dis.	15	0	44		II.	Sh.	Eg.		12	5		II.	Tr.	In.
	22	27		I.	Sh.	In.		15	11		I.	Oc.	Dis.		13	45		II.	Sh.	In.
	23	44		I.	Tr.	Eg.		18	25	37	I.	Ec.	Re.		15	1		II.	Tr.	Eg.
6	0	29		III.	Tr.	In.	16	12	23		I.	Tr.	In.		16	40		II.	Sh.	Eg.
	0	47		I.	Sh.	Eg.		13	19		I.	Sh.	In.	26	5	11		IV.	Oc.	Dis.
	3	13	59	II.	Ec.	Re.		14	23		II.	Oc.	Dis.		6	12		I.	Oc.	Dis.
	4	12		III.	Tr.	Eg.		14	43		I.	Tr.	Eg.		9	18	11	I.*	Ec.	Re.
	4	43		III.	Sh.	In.		15	39		I.	Sh.	Eg.		10	4		IV.	Oc.	Re.
	8	26		III.*	Sh.	Eg.		18	54		III.	Oc.	Dis.		12	56	51	IV.	Ec.	Dis.
	18	41		I.	Oc.	Dis.		19	5	54	II.	Ec.	Re.		17	43	47	IV.	Ec.	Re.
	22	1	36	I.	Ec.	Re.		22	36		III.	Oc.	Re.	27	3	23		I.	Tr.	In.
7	15	54		I.	Tr.	In.		22	43	2	III.	Ec.	Dis.		4	10		I.	Sh.	In.
	16	55		I.	Sh.	In.	17	2	16	39	III.	Ec.	Re.		5	43		I.	Tr.	Eg.
	17	4		II.	Tr.	In.		9	41		I.*	Oc.	Dis.		6	31		I.	Sh.	Eg.
	18	14		I.	Tr.	Eg.		12	54	19	I.	Ec.	Re.		6	31		II.	Oc.	Dis.
	19	11		II.	Sh.	In.		18	29		IV.	Tr.	In.		10	57	52	II.	Ec.	Re.
	19	16		I.	Sh.	Eg.		23	21		IV.	Tr.	Eg.		13	30		III.	Tr.	In.
	20	1		II.	Tr.	Eg.	18	2	59		IV.	Sh.	In.		16	42		III.	Sh.	In.
	22	7		II.	Sh.	Eg.		6	53		I.	Tr.	In.		17	13		III.	Tr.	Eg.
8	13	11		I.	Oc.	Dis.		7	47		I.	Sh.	In.		20	24		III.	Sh.	Eg.
	16	30	28	I.	Ec.	Re.		7	55		IV.	Sh.	Eg.	28	0	42		I.	Oc.	Dis.
9	9	10		IV.*	Oc.	Dis.		9	13		I.*	Tr.	Eg.		3	46	53	I.	Ec.	Re.
	10	23		I.	Tr.	In.		9	16		II.*	Tr.	In.		21	53		I.	Tr.	In.
	11	24		I.	Sh.	In.		10	8		I.	Sh.	Eg.		22	39		I.	Sh.	In.
	11	39		II.	Oc.	Dis.		11	7		II.	Sh.	In.	29	0	13		I.	Tr.	Eg.
	12	44		I.	Tr.	Eg.		12	13		II.	Tr.	Eg.		0	59		I.	Sh.	Eg.
	13	45		I.	Sh.	Eg.		14	3		II.	Sh.	Eg.		1	29		II.	Tr.	In.
	14	1		IV.	Oc.	Re.	19	4	11		I.	Oc.	Dis.		3	3		II.	Sh.	In.
	14	34		III.	Oc.	Dis.		7	23	9	I.	Ec.	Re.		4	25		II.	Tr.	Eg.
	16	31	17	II.	Ec.	Re.	20	1	23		I.	Tr.	In.		5	58		II.	Sh.	Eg.
	18	17		III.	Oc.	Re.		2	16		I.	Sh.	In.		19	12		I.	Oc.	Dis.
	18	43	42	III.	Ec.	Dis.		3	43		I.	Tr.	Eg.		22	15	41	I.	Ec.	Re.
	18	54	1	IV.	Ec.	Dis.		3	45		II.	Oc.	Dis.	30	16	23		I.	Tr.	In.
	22	17	27	III.	Ec.	Re.		4	36		I.	Sh.	Eg.		17	8		I.	Sh.	In.
	23	41	16	IV.	Ec.	Re.		8	23	13	II.*	Ec.	Re.		18	43		I.	Tr.	Eg.
10	7	41		I.	Oc.	Dis.		9	8		III.*	Tr.	In.		19	28		I.	Sh.	Eg.
	10	59	11	I.	Ec.	Re.		12	42		III.	Sh.	In.		19	54		II.	Oc.	Dis.
11	4	53		I.	Tr.	In.														

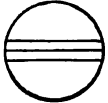
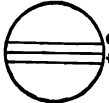
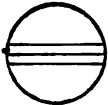
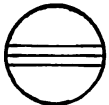
NOTE.—In. denotes ingress, Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

JUNE.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.		r *	III.		d * r *
II.		r *	IV.		d * r *

Configurations at 9^h 0^m for an Inverting Telescope.

Day.	West.	East.
1	'3 '2' 4' '1' ○	
2	○ '1' 4' '3' ○	'2 ●
3	4' ○	'1 ●
4	4' '1' '2' ○	3'
5	'4 '2' ○	'1 3'
6	'4 '1' 3' ○	'2
7	'4 3' ○	'1 2'
8	'3 '4 '2' '1' ○	
9	'3 '2' '1' ○	'1
10	○	'1 2' '1 ●
11	○ '2' '1' ○	'3 '4
12	'2 ○	'1 3' '4
13	'1' 3' ○	'2 '4
14	3' ○	'1 2' '4
15	'3 '2' '1' ○	4'
16	'3 '2' ○	'1 4'
17	'1 ○	4' '3' '2
18	○ '1' 4' ○	'3
19	4' '2' ○	'1 3'
20	4' '1' ○	'1 2'
21	4' 3' ○	'1 2'
22	'4 '3 2' '1' ○	
23	'4 '3 '2' ○	'1
24	'4 '1' ○	'3 '2
25	○ '1' '4' ○	'2' '3
26	2' ○	'3 '1 ● '4 ●
27	'1' ○	3' '4 '2 ●
28	3' ○	'1 2' '4
29	3' '1' '2' ○	'4
30	'3 '2' ○	'1 '4

WASHINGTON MEAN TIME.

JULY.

d	h	m	s				d	h	m	s				d	h	m	s			
1	0	15	12	II.	Ec.	Re.	6	5	40		II.	Sh.	In.	12	7	36	37	I.	Ec.	Re.
	3	38		III.	Oc.	Dis.		7	15		II.	Tr.	Eg.	13	1	31		IV.	Oc.	Dis.
	10	15	28	III.	Ec.	Re.		8	36.		II.*	Sh.	Eg.		1	54		I.	Tr.	In.
	13	42		I.	Oc.	Dis.		21	13		I.	Oc.	Dis.		2	28		I.	Sh.	In.
	16	44	21	I.	Ec.	Re.	7	0	10	35	I.	Ec.	Re.		4	15		I.	Tr.	Eg.
2	10	53		I.	Tr.	In.		18	24		I.	Tr.	In.		4	48		I.	Sh.	Eg.
	11	36		I.	Sh.	In.		19	2		I.	Sh.	In.		6	26		IV.	Oc.	Re.
	13	14		I.	Tr.	Eg.		20	44		I.	Tr.	Eg.		6	53	58	IV.	Ec.	Dis.
	13	57		I.	Sh.	Eg.		21	22		I.	Sh.	Eg.		7	8		II.	Tr.	In.
	14	54		II.	Tr.	In.		22	41		II.	Oc.	Dis.		8	17		II.*	Sh.	In.
	16	22		II.	Sh.	In.	8	2	49	54	II.	Ec.	Re.		10	5		II.	Tr.	Eg.
	17	50		II.	Tr.	Eg.		8	3		III.*	Oc.	Dis.		11	12		II.	Sh.	Eg.
	19	17		II.	Sh.	Eg.		14	15	18	III.	Ec.	Re.		11	45	16	IV.	Ec.	Re.
3	8	12		I.*	Oc.	Dis.		15	43		I.	Oc.	Dis.		23	14		I.	Oc.	Dis.
	11	13	7	I.	Ec.	Re.		18	39	13	I.	Ec.	Re.	14	2	5	22	I.	Ec.	Re.
4	5	23		I.	Tr.	In.	9	12	54		I.	Tr.	In.		20	24		I.	Tr.	In.
	6	5		I.	Sh.	In.		13	31		I.	Sh.	In.		20	57		I.	Sh.	In.
	7	44		I.	Tr.	Eg.		15	14		I.	Tr.	Eg.		22	45		I.	Tr.	Eg.
	8	25		I.*	Sh.	Eg.		15	51		I.	Sh.	Eg.		23	17		I.	Sh.	Eg.
	9	17		H.	Oc.	Dis.		17	43		II.	Tr.	In.	15	1	28		II.	Oc.	Dis.
	13	32	33	II.	Ec.	Re.		18	59		II.	Sh.	In.		5	24	38	II.	Ec.	Re.
	14	35		IV.	Tr.	In.		20	40		II.	Tr.	Eg.		12	29		III.	Oc.	Dis.
	17	53		III.	Tr.	In.		21	54		II.	Sh.	Eg.		17	44		I.	Oc.	Dis.
	19	29		IV.	Tr.	Eg.	10	10	14		I.	Oc.	Dis.		18	14	23	III.	Ec.	Re.
	20	40		III.	Sh.	In.		13	7	58	I.	Ec.	Re.		20	33	59	I.	Ec.	Re.
	20	59		IV.	Sh.	In.	11	7	24		I.	Tr.	In.	16	14	55		I.	Tr.	In.
	21	36		III.	Tr.	Eg.		7	59		I.*	Sh.	In.		15	25		I.	Sh.	In.
5	0	22		III.	Sh.	Eg.		9	44		I.	Tr.	Eg.		17	15		I.	Tr.	Eg.
	1	55		IV.	Sh.	Eg.		10	20		I.	Sh.	Eg.		17	45		I.	Sh.	Eg.
	2	43		I.	Oc.	Dis.		12	4		II.	Oc.	Dis.		20	33		II.	Tr.	In.
	5	41	48	I.	Ec.	Re.		16	7	16	II.	Ec.	Re.		21	35		II.	Sh.	In.
	23	54		I.	Tr.	In.		22	18		III.	Tr.	In.		23	30		II.	Tr.	Eg.
6	0	34		I.	Sh.	In.	12	0	39		III.	Sh.	In.	17	0	31		II.	Sh.	Eg.
	2	14		I.	Tr.	Eg.		2	0		III.	Tr.	Eg.		12	15		I.	Oc.	Dis.
	2	54		I.	Sh.	Eg.		4	21		III.	Sh.	Eg.		15	2	42	I.	Ec.	Re.
	4	18		II.	Tr.	In.		4	44		I.	Oc.	Dis.							

By reason of the proximity of JUPITER to the SUN the phenomena of the satellites are not given from July 18 to September 16.

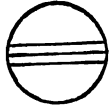
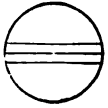
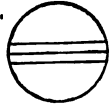
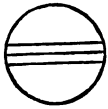
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

JULY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.		r *	III.		r *
II.		r *	IV.		d * r *

Configurations at 8^h 30^m for an Inverting Telescope.

Day.	West.				East.			
1			'1	○ '3	'2		4'	
2				○	'1' 2'	'3	4'	
3		2'		○		4' 3'	'1 ●	
4			1' 2'	○	4' 3'			
5		4'	3'	○	'1	2'		
6		3' 4'	'1' 2'	○				
7	4'		'3 '2	○	'1			
8	4'		'1	○	'2		'3 ●	
9	'4			○	'1' 2'	'3		
10	'4		2' '1	○		3'		
11	○ '1	'4	'2	○		3'		
12			'4 3'	○	'1	'2		
13	○ 2'	3'	'1	○			'4 ●	
14		'3 '2		○	'1	'4		
15			'1 '3	○	'2		'4	
16				○	'1' 2' '3		'4	
17		2' '1		○		'3	'4	
18				○				
19				○				
20				○				
21				○				
22				○				
23				○				
24				○				
25				○				
26				○				
27				○				
28				○				
29				○				
30				○				
31				○				

WASHINGTON MEAN TIME.

SEPTEMBER.

By reason of the proximity of JUPITER to the SUN the phenomena of the satellites are not given from July 18 to September 16.

d	h	m	s				d	h	m	s				d	h	m	s			
17	1	49	26	II.	Ec.	Dis.	21	21	29		I.	Sh.	In.	26	14	54		IV.	Sh.	In.
	5	43		II.	Oc.	Re.		22	3		I.	Tr.	In.		19	44		IV.	Sh.	Eg.
	11	26	16	I.	Ec.	Dis.		22	24		III.	Tr.	Eg.		21	0		IV.	Tr.	In.
	14	14		I.	Oc.	Re.		23	49		I.	Sh.	Eg.	27	1	48		IV.	Tr.	Eg.
18	2	29	53	III.	Ec.	Dis.	22	0	23		I.	Tr.	Eg.		4	54		I.	Sh.	In.
	7	3	43	IV.	Ec.	Dis.		10	13		II.	Sh.	In.		5	34		I.	Tr.	In.
	8	11		III.	Oc.	Re.		11	23		II.	Tr.	In.		7	14		I.	Sh.	Eg.
	8	32		I.	Sh.	In.		13	7		II.	Sh.	Eg.		7	54		I.	Tr.	Eg.
	9	3		I.	Tr.	In.		14	18		II.	Tr.	Eg.		17	42	6	II.	Ec.	Dis.
	10	52		I.	Sh.	Eg.		18	51	33	I.	Ec.	Dis.		21	55		II.	Oc.	Re.
	11	23		I.	Tr.	Eg.		21	44		I.	Oc.	Re.	28	2	16	42	I.	Ec.	Dis.
	11	44	28	IV.	Ec.	Re.	23	15	57		I.*	Sh.	In.		5	14		I.	Oc.	Re.
	12	0		IV.	Oc.	Dis.		16	33		I.*	Tr.	In.		20	24		III.	Sh.	In.
	16	51		IV.*	Oc.	Re.		18	17		I.	Sh.	Eg.		23	10		III.	Tr.	In.
	20	56		II.	Sh.	In.		18	53		I.	Tr.	Eg.		23	23		I.	Sh.	In.
	21	59		II.	Tr.	In.	24	4	24	45	II.	Ec.	Dis.	29	0	3		III.	Sh.	Eg.
	23	50		II.	Sh.	Eg.		8	31		II.	Oc.	Re.		0	3		I.	Tr.	In.
19	0	54		II.	Tr.	Eg.		13	19	56	I.	Ec.	Dis.		1	43		I.	Sh.	Eg.
	5	54	42	I.	Ec.	Dis.		16	14		I.*	Oc.	Re.		2	23		I.	Tr.	Eg.
	8	44		I.	Oc.	Re.	25	6	27	46	III.	Ec.	Dis.		2	48		III.	Tr.	Eg.
	3	0		I.	Sh.	In.		10	26		I.	Sh.	In.		12	47		II.	Sh.	In.
	3	33		I.	Tr.	In.		11	4		I.	Tr.	In.		14	10		II.	Tr.	In.
	5	20		I.	Sh.	Eg.		12	34		III.	Oc.	Re.		15	42		II.*	Sh.	Eg.
	5	53		I.	Tr.	Eg.		12	46		I.	Sh.	Eg.		17	4		II.*	Tr.	Eg.
	15	6	47	II.	Ec.	Dis.		13	24		I.	Tr.	Eg.		20	45	8	I.	Ec.	Dis.
	19	7		II.	Oc.	Re.		23	30		II.	Sh.	In.		23	44		I.	Oc.	Re.
21	0	23	6	I.	Ec.	Dis.	26	0	47		II.	Tr.	In.	30	17	51		I.	Sh.	In.
	3	14		I.	Oc.	Re.		2	25		II.	Sh.	Eg.		18	33		I.	Tr.	In.
	16	26		III.*	Sh.	In.		3	41		II.	Tr.	Eg.		20	11		I.	Sh.	Eg.
	18	46		III.	Tr.	In.		7	48	20	I.	Ec.	Dis.		20	53		I.	Tr.	Eg.
	20	5		III.	Sh.	Eg.		10	44		I.	Oc.	Re.							

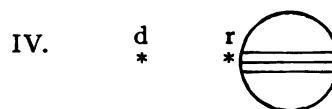
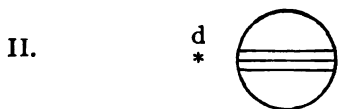
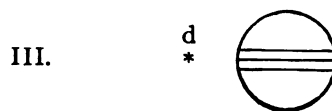
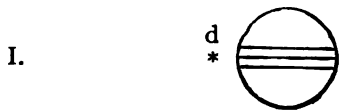
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

[Eph 08]

WASHINGTON MEAN TIME.

SEPTEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 16^h 30^m for an Inverting Telescope.

Day.	West.	East.
1		○
2		○
3		○
4		○
5		○
6		○
7		○
8		○
9		○
10		○
11		○
12		○
13		○
14		○
15		○
16		○
17	'4 '3	○ '1 '2
18	'1	○ '2 '3 '4 ●
19	'2	○ '1 '4 '3
20	'1	○ '3 '4 '2 ●
21		○ '3 '1 '2 '4
22	'3 '2	○ '4
23	'3 '2	○ '1 '4
24	'3	○ '1 '2 '4
25	'1	○ '3 '2 '4
26	'2	○ '4 '1 '3
27	'4 '1 '2	○ '3
28	'4	○ '3 '1 '2
29	○ '2 '4 '3 '1	○
30	'4 '3 '2	○ '1

WASHINGTON MEAN TIME.

OCTOBER.

d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s										
1	7	0	8	II.	12	9	13		I.	22	4	24		IV.	22	4	24		IV.	22	4	24		IV.	22	4	24	
11	19			II.	13	3	10		I.	9	3			IV.	9	3			IV.	9	3			IV.	9	3		
15	13	28		I.	4	2			I.	14	46	43		II.*	14	46	43		II.*	14	46	43		II.*	14	46	43	
18	14			I.	4	20			III.	19	39			II.	19	39			II.	19	39			II.	19	39		
2	10	25	59	III.	5	30			I.	20	53	30		I.	20	53	30		I.	20	53	30		I.	20	53	30	
12	20			I.	6	22			I.	23	0	10		I.	23	0	10		I.	23	0	10		I.	23	0	10	
13	3			I.	7	53			III.	18	0			I.	18	0			I.	18	0			I.	18	0		
14	40			I.	7	58			III.	19	0			I.	19	0			I.	19	0			I.	19	0		
15	23			I.	8	52			IV.	20	20			I.	20	20			I.	20	20			I.	20	20		
16	57			III.*	11	29			III.	21	20			I.	21	20			I.	21	20			I.	21	20		
3	2	4		II.	13	40			IV.	22	20	20		III.	22	20	20		III.	22	20	20		III.	22	20	20	
3	33			II.	17	8			IV.*	24	1	48	40	III.	24	1	48	40	III.	24	1	48	40	III.	24	1	48	40
4	59			II.	17	55			II.	2	20			III.	2	20			III.	2	20			III.	2	20		
6	27			II.	19	40			II.	5	54			III.	5	54			III.	5	54			III.	5	54		
9	41	51		I.	20	49			II.	9	45			II.	9	45			II.	9	45			II.	9	45		
12	44			I.	21	50			IV.	11	45			II.	11	45			II.	11	45			II.	11	45		
4	6	48		I.	22	34			II.	12	40			II.	12	40			II.	12	40			II.	12	40		
7	33			I.	14	0	31	57	I.	15	21	48		II.*	15	21	48		II.*	15	21	48		II.*	15	21	48	
9	8			I.	3	42			I.	18	39			I.	18	39			I.	18	39			I.	18	39		
9	53			I.	21	38			I.	25	12	29		I.	25	12	29		I.	25	12	29		I.	25	12	29	
20	17	30		II.	22	32			I.	13	30			I.	13	30			I.	13	30			I.	13	30		
5	0	43		II.	23	58			I.	14	49			I.*	14	49			I.*	14	49			I.*	14	49		
1	3	41		IV.	12	11	8		II.	15	50			II.*	15	50			II.*	15	50			II.*	15	50		
4	10	11		I.	16	53			II.*	26	4	4	5	II.	26	4	4	5	II.	26	4	4	5	II.	26	4	4	5
5	42	17		IV.	19	0	15		I.	9	1			I.	9	1			I.	9	1			I.	9	1		
7	14			I.	22	12			I.	13	9			I.	13	9			I.	13	9			I.	13	9		
8	22			IV.	16	7			I.*	27	6	57		I.	27	6	57		I.	27	6	57		I.	27	6	57	
13	8			IV.	17	2			I.*	8	0			I.	8	0			I.	8	0			I.	8	0		
6	0	22		III.	18	22	32		III.	9	17			I.	9	17			I.	9	17			I.	9	17		
1	16			I.	18	27			I.	10	19			I.	10	19			I.	10	19			I.	10	19		
2	3			I.	19	21			I.	12	15			I.	12	15			I.	12	15			I.	12	15		
3	32			I.	21	51	18		III.	15	53			III.*	15	53			III.*	15	53			III.*	15	53		
3	36			I.	22	2			III.	16	29			III.*	16	29			III.*	16	29			III.*	16	29		
4	1			III.	7	12			III.	20	2			III.	20	2			III.	20	2			III.	20	2		
4	23			I.	9	2			II.	23	2			II.	23	2			II.	23	2			II.	23	2		
7	9			III.	10	6			II.	28	1	6		II.	28	1	6		II.	28	1	6		II.	28	1	6	
15	21			II.*	11	56			I.	4	0			II.	4	0			II.	4	0			II.	4	0		
16	56			II.*	13	28	35		I.*	4	18	23		I.	4	18	23		I.	4	18	23		I.	4	18	23	
18	16			II.	16	41			I.	7	38			I.	7	38			I.	7	38			I.	7	38		
19	50			II.	18	10	35		I.	2	29			I.	2	29			I.	2	29			I.	2	29		
22	38	36		I.	13	51			I.	3	45			I.	3	45			I.	3	45			I.	3	45		
7	1	44		I.	19	1	28	29	II.	4	48			II.	4	48			II.	4	48			II.	4	48		
19	45			I.	6	16			I.	7	35			I.	7	35			I.	7	35			I.	7	35		
20	33			I.	12	55			I.	2	29			I.	2	29			I.	2	29			I.	2	29		
22	5			I.	13	51			I.	3	45			I.	3	45			I.	3	45			I.	3	45		
22	53			I.	6	16			II.	4	48			II.	4	48			II.	4	48			II.	4	48		
8	9	35	36	I.	17	22			I.	17	22	22		I.*	17	22	22		I.*	17	22	22		I.*	17	22	22	
14	6			II.	11	11	52		I.	22	23			II.	22	23			II.	22	23			II.	22	23		
17	6	55		I.*	11	11			I.	22	46	39		I.	22	46	39		I.	22	46	39		I.	22	46	39	
20	13			I.	5	4			I.	2	7			I.	2	7			I.	2	7			I.	2	7		
9	14	13		I.	6	1			I.	2	49			I.	2	49			I.	2	49			I.	2	49		
14	24	1		III.	7	24			I.	7	35			I.	7	35			I.	7	35			I.	7	35		
15	3			I.	8	17			III.	12	52			III.	12	52			III.	12	52			III.	12	52		
16	33			I.*	8	21			I.	17	27			I.	17	27			I.	17	27			I.	17	27		
17	22			I.*	11	55			III.	19	54			III.	19	54			III.	19	54			III.	19	54		
21	18			III.	12	12			III.	20	58			III.	20	58			III.	20	58			III.	20	58		
10	4	38		II.	15	46			III.*	22	14			III.*	22	14			III.*	22	14			III.*	22	14		
6	18			II.	20	29			II.	23	18			II.	23	18			II.	23	18			II.	23	18		
7	33			II.	22	24			II.	2	18	2		I.	2	18	2		I.	2	18	2		I.	2	18	2	
9	12			II.	23	23			II.	5	45	54		I.	5	45	54		I.	5	45	54		I.	5	45	54	
11	35	16		I.	21	1	18		II.	10	8			II.	10	8			II.	10	8			II.	10	8		
14	43			I.	12	19			I.	12	19			I.	12	19			I.	12	19			I.	12	19		
11	8	42		I.	19	3	8		I.	14	27			I.*	14	27			I.*	14	27			I.*	14	27		
9	33			I.	23	39	17		IV.	15	13	56		I.*	15	13	56		I.*	15	13	56		I.*	15	13	56	
11	2			I.	23	39	17		IV.	17	14	56		I.*	17	14	56		I.*	17	14	56		I.*	17	14	56	
22	52	58		II.	22	0	31		I.	17	20			II.*	17	20			II.*	17	20			II.*	17	20		
12	3	30		II.	1	52			I.	20	36			I.	20	36			I.	20	36			I.	20	36		
6	3	35		I.	2	50			I.					I.					I.					I.				

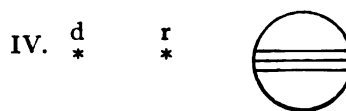
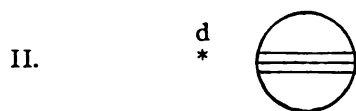
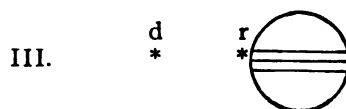
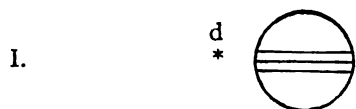
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

OCTOBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 16^h 0^m for an Inverting Telescope.

Day.	West.			East.		
1	'4	'3	○	'2		'1 ●
2	'4		I' ○	2'		'3 ●
3	'4	2'	○	'1	'3	
4		'4 I' '2	○		3'	
5			○	'4	'13' '2	
6		'1 3'	○ 2'		'4	
7	3'	'2	○	I'	'1	'4
8	'3		I' ○	'2		'4
9	○ I'		○	2'		4''3 ●
10		2'	○	'1	'3	4'
11		'2 I'	○		3' 4'	
12			○	'1 3'	4'	
13		'1 3'	○ 4' 2'			
14	3'	2' 4'	○	I'		
15	4' '3	'1	○			'2 ●
16	4'	'3	○ I'	2'		
17	4'	2'	○	'3		'1 ●
18	'4	'2 I'	○		'3	
19	'4		○	'1 '2 3'		
20	'4	I' 3'	○	2'		
21	3' 2' '4		○	I'		
22	'3	'1	○	'4		'2 ●
23		'3	○	I' 2' '4		
24		2'	○	'3	'4	'1 ●
25		'2 I'	○		'3	'4
26			○	'1 '2 3'		4'
27		I'	○ 3'	2'		4'
28	3' 2'		○	'1		4'
29	'3	'1 '2	○		4'	
30	○ 4'	'3	○	I' '2		
31	○ 2'	4' '1	○	'3		

WASHINGTON MEAN TIME.

NOVEMBER.

d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s	
1	14	22		I.* Sh. In.	11	7	3		II. Sh. Eg.	21	17	36	48		III.* Ec. Re.				
	15	28		I.* Tr. In.		8	4	30	I. Ec. Dis.		19	5			III. Oc. Dis.				
	16	42		I.* Sh. Eg.		9	20		II. Tr. Eg.		19	59			II. Sh. In.				
	17	47		I.* Tr. Eg.		11	31		I. Oc. Re.		22	24			II. Tr. In.				
2	6	39	44	II. Ec. Dis.	12	5	13		I. Sh. In.		22	33			III. Oc. Re.				
	11	43	11	I. Ec. Dis.		6	23		I. Tr. In.		22	52			II. Sh. Eg.				
	11	45		II. Oc. Re.		7	33		I. Sh. Eg.		22	53	56*		I. Ec. Dis.				
	15	6		I.* Oc. Re.		8	42		I. Tr. Eg.	22	1	16			II. Tr. Eg.				
3	8	51		I. Sh. In.		22	33	51	II. Ec. Dis.		2	24			I. Oc. Re.				
	9	57		I. Tr. In.	13	2	32	45	I. Ec. Dis.		20	3			I. Sh. In.				
	11	11		I. Sh. Eg.		3	49		II. Oc. Re.		21	17			I. Tr. In.				
	12	16		I. Tr. Eg.		6	0		I. Oc. Re.		22	23			I. Sh. Eg.				
	16	13		III.* Sh. In.		23	41		I. Sh. In.		23	36			I. Tr. Eg.				
	19	50		III. Sh. Eg.	14	0	52		I. Tr. In.	23	14	27	2		II.* Ec. Dis.				
	20	44		III. Tr. In.		2	1		I. Sh. Eg.		17	22	8		I.* Ec. Dis.				
4	0	16		III. Tr. Eg.		3	11		I. Tr. Eg.		19	48			II. Oc. Re.				
	1	36		II. Sh. In.		10	12	40	III. Ec. Dis.		20	52			I. Oc. Re.				
	3	48		II. Tr. In.		13	39	35	III.* Ec. Re.	24	7	1	28		IV. Ec. Dis.				
	4	30		II. Sh. Eg.		14	58		III.* Oc. Dis.		11	31	50		IV. Ec. Re.				
	6	11	29	I. Ec. Dis.		17	26		II.* Sh. In.		14	32			I.* Sh. In.				
	6	40		II. Tr. Eg.		18	28		III. Oc. Re.		15	45			I.* Tr. In.				
	9	35		I. Oc. Re.		19	47		II. Tr. In.		16	51			I.* Sh. Eg.				
5	3	19		I. Sh. In.		20	20		II. Sh. Eg.		18	4			I.* Tr. Eg.				
	4	26		I. Tr. In.		21	0	59	I. Ec. Dis.		18	51			IV. Oc. Dis.				
	5	39		I. Sh. Eg.		22	39		II. Tr. Eg.		23	12			IV. Oc. Re.				
	6	46		I. Tr. Eg.	15	0	29		I. Oc. Re.	25	4	8			III. Sh. In.				
19	58	5		II. Ec. Dis.		18	10		I.* Sh. In.		7	43			III. Sh. Eg.				
6	0	39	44	I. Ec. Dis.		19	21		I. Tr. In.		9	10			III. Tr. In.				
	1	7		II. Oc. Re.		20	29		I. Sh. Eg.		9	15			II. Sh. In.				
	4	4		I. Oc. Re.		20	46		IV. Sh. In.		11	42			II. Tr. In.				
	21	48		I. Sh. In.		21	40		I. Tr. Eg.		11	50	23		I. Ec. Dis.				
	22	56		I. Tr. In.	16	1	29		IV. Sh. Eg.		12	9			II. Sh. Eg.				
7	0	8		I. Sh. Eg.		8	3		IV. Tr. In.		12	38			III. Tr. Eg.				
	1	15		I. Tr. Eg.		11	51	13	II. Ec. Dis.		14	34			II.* Tr. Eg.				
	6	15	21	III. Ec. Dis.		12	29		IV. Tr. Eg.		15	21			I.* Oc. Re.				
	9	42	45	III. Ec. Re.		15	29	12	I.* Ec. Dis.	26	9	0			I. Sh. In.				
	10	48		III. Oc. Dis.		17	9		II.* Oc. Re.		10	14			I. Tr. In.				
	13	2	33	IV. Ec. Dis.		18	58		I. Oc. Re.		11	20			I. Sh. Eg.				
	14	20		III.* Oc. Re.	17	12	38		I. Sh. In.		12	33			I. Tr. Eg.				
	14	52		II.* Sh. In.		13	50		I.* Tr. In.	27	3	45	31		II. Ec. Dis.				
	17	8		II.* Tr. In.		14	58		I.* Sh. Eg.		6	18	37		I. Ec. Dis.				
	17	35	57	IV.* Ec. Re.		16	9		I.* Tr. Eg.		9	8			II. Oc. Re.				
	17	46		II.* Sh. Eg.	18	0	10		III. Sh. In.		9	49			I. Oc. Re.				
	19	7	59	I. Ec. Dis.		3	46		III. Sh. Eg.	28	3	28			I. Sh. In.				
	20	0		II. Tr. Eg.		5	5		III. Tr. In.		4	43			I. Tr. In.				
	22	33		I. Oc. Re.		6	42		II. Sh. In.		5	48			I. Sh. Eg.				
	23	56		IV. Oc. Dis.		8	34		III. Tr. Eg.		7	2			I. Tr. Eg.				
8	4	27		IV. Oc. Re.		9	6		II. Tr. In.		18	7	58		III.* Ec. Dis.				
	16	16		I.* Sh. In.		9	36		II. Sh. Eg.		21	33	51		III. Ec. Re.				
	17	25		I.* Tr. In.		9	57	28	I. Ec. Dis.		22	32			II. Sh. In.				
	18	36		I. Sh. Eg.		11	58		II. Tr. Eg.		23	8			III. Oc. Dis.				
	19	44		I. Tr. Eg.		13	26		I.* Oc. Re.	29	0	46	50		I. Ec. Dis.				
9	9	15	27	II. Ec. Dis.	19	7	6		I. Sh. In.		0	59			II. Tr. In.				
	13	36	13	I.* Ec. Dis.		8	19		I. Tr. In.		1	25			II. Sh. Eg.				
	14	27		II.* Oc. Re.		9	26		I. Sh. Eg.		2	35			III. Oc. Re.				
	17	2		I.* Oc. Re.		10	38		I. Tr. Eg.		3	51			II. Tr. Eg.				
10	10	44		I. Sh. In.	20	1	9	39	II. Ec. Dis.		4	18			I. Oc. Re.				
	11	54		I. Tr. In.		4	25	42	I. Ec. Dis.		21	57			I. Sh. In.				
	13	4		I. Sh. Eg.		6	29		II. Oc. Re.		23	11			I. Tr. In.				
	14	13		I.* Tr. Eg.		7	55		I. Oc. Re.	30	0	16			I. Sh. Eg.				
	20	12		III. Sh. In.	21	1	35		I. Sh. In.		1	30			I. Tr. Eg.				
	23	49		III. Sh. Eg.		2	48		I. Tr. In.		17	2	54		II.* Ec. Dis.				
11	0	56		III. Tr. In.		3	55		I. Sh. Eg.		19	15	2		I. Ec. Dis.				
	4	9		II. Sh. In.		5	7		I. Tr. Eg.		22	26			II. Oc. Re.				
	4	27		III. Tr. Eg.		14	10	23	III.* Ec. Dis.		22	46			I. Oc. Re.				
	6	28		II. Tr. In.															

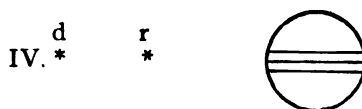
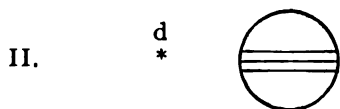
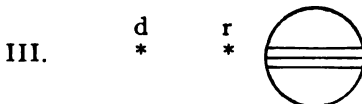
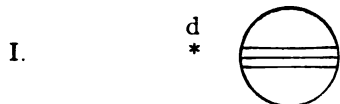
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

NOVEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 15^h 30^m for an Inverting Telescope.

Day.	West.			East.		
1	○ 1'	4'	'2	○	'3	
2		4'		○ 1'	'2	3'
3	4'		1'	○	3'	2'
4	'4		3' 2'	○	'1	
5		'4	3' 1' '2	○		
6		'4	'3	○	1'	'2
7			'1	○ ³ / ₂		'4 ●
8			2'	○ 1'	'4	'3
9				○ '2		3''4 '1 ●
10			1'	○	3' 2'	'4
11			3' 2'	○	'1	'4
12		3'	³ / ₁	○		4'
13		'3		○	1' '2	4'
14			'1	○	2'	4' '3 ●
15			2'	○	1' '4	'3
16			4'	○		3' '1 ● '2 ●
17	○ 1'	4'		○	3' 2'	
18		4'	3' 2'	○	'1	
19	4'	3'	'2 1'	○		
20	4'	'3		○	'1 '2	
21	'4		'1	○	2'	'3 ●
22		'4	2'	○	1' '3	
23		'4	'1	○		'3 '2 ●
24			'4	○ 1'	² / ₈	
25			3' 2'	○ '1	'4	
26		3' '2	1'	○		'4
27		'3		○ ² / ₁		'4
28			1' '3	○	2'	'4
29			2'	○	1' '3	4'
30			'1 '2	○	'3	4'

WASHINGTON MEAN TIME.

DECEMBER.

d	h	m	s		d	h	m	s		d	h	m	s		d	h	m	s	
1	16	25		I.* Sh. In.	11	10	4	22	I. Ec. Dis.	21	5	57		I. Sh. Eg.	21	5	57		I. Sh. Eg.
17	40			I.* Tr. In.	12	57			IV.* Oc. Dis.	7	8			I. Tr. Eg.	7	8			I. Tr. Eg.
18	45			I. Sh. Eg.	13	35			I.* Oc. Re.	22	0	50	43	II. Ec. Dis.	0	50	43		II. Ec. Dis.
19	59			I. Tr. Eg.	14	19			II.* Oc. Re.	0	53	40		I. Ec. Dis.	0	53	40		I. Ec. Dis.
2	8	5		III. Sh. In.	17	8			IV.* Oc. Re.	4	22			I. Oc. Re.	4	22			I. Oc. Re.
11	40			III. Sh. Eg.	12	7	15		I. Sh. In.	6	7			II. Oc. Re.	6	7			II. Oc. Re.
11	48			II. Sh. In.	8	30			I. Tr. In.	22	5			I. Sh. In.	22	5			I. Sh. In.
13	11			III.* Tr. In.	9	35			I. Sh. Eg.	23	17			I. Tr. In.	23	17			I. Tr. In.
13	43	17		I.* Ec. Dis.	10	48			I. Tr. Eg.	23	0	25		I. Sh. Eg.	0	25			I. Sh. Eg.
14	16			II.* Tr. In.	13	2	3	34	III. Ec. Dis.	1	36			I. Tr. Eg.	1	36			I. Tr. Eg.
14	42			II.* Sh. Eg.	3	38			II. Sh. In.	19	21	54		I. Ec. Dis.	19	21	54		I. Ec. Dis.
14	43			IV.* Sh. In.	4	32	35		I. Ec. Dis.	19	27			II. Sh. In.	19	27			II. Sh. In.
16	38			III.* Tr. Eg.	5	28	23		III. Ec. Re.	19	59			III. Sh. In.	19	59			III. Sh. In.
17	8			II.* Tr. Eg.	6	4			II. Tr. In.	21	48			II. Tr. In.	21	48			II. Tr. In.
17	14			I.* Oc. Re.	6	31			II. Sh. Eg.	22	20			II. Sh. Eg.	22	20			II. Sh. Eg.
19	23			IV. Sh. Eg.	7	3			III. Oc. Dis.	22	49			I. Oc. Re.	22	49			I. Oc. Re.
8	2	33		IV. Tr. In.	8	3			I. Oc. Re.	23	32			III. Sh. Eg.	23	32			III. Sh. Eg.
6	49			IV. Tr. Eg.	8	55			II. Tr. Eg.	24	0	38		II. Tr. Eg.	0	38			II. Tr. Eg.
10	53			I. Sh. In.	10	27			III. Oc. Re.	0	50			III. Tr. In.	0	50			III. Tr. In.
12	8			I. Tr. In.	14	1	44		I. Sh. In.	4	13			III. Tr. Eg.	4	13			III. Tr. Eg.
13	13			I.* Sh. Eg.	2	58			I. Tr. In.	16	34			I.* Sh. In.	16	34			I.* Sh. In.
14	27			I.* Tr. Eg.	4	3			I. Sh. Eg.	17	45			I.* Tr. In.	17	45			I.* Tr. In.
4	6	21	24	II. Ec. Dis.	5	16			I. Tr. Eg.	18	54			I. Sh. Eg.	18	54			I. Sh. Eg.
8	11	30		I. Ec. Dis.	22	14	45		II. Ec. Dis.	20	3			I. Tr. Eg.	20	3			I. Tr. Eg.
11	43			I. Oc. Re.	23	0	47		I. Ec. Dis.	25	13	50	9	I.* Ec. Dis.	13	50	9		I.* Ec. Dis.
11	45			II. Oc. Re.	15	2	31		I. Oc. Re.	14	9	17		II.* Ec. Dis.	14	9	17		II.* Ec. Dis.
5	5	22		I. Sh. In.	3	36			II. Oc. Re.	17	17			I.* Oc. Re.	17	17			I.* Oc. Re.
6	37			I. Tr. In.	20	12			I. Sh. In.	19	22			II. Oc. Re.	19	22			II. Oc. Re.
7	41			I. Sh. Eg.	21	26			I. Tr. In.	11	2			I.* Sh. In.	11	2			I.* Sh. In.
8	56			I. Tr. Eg.	22	32			I. Sh. Eg.	12	12			I.* Tr. In.	12	12			I.* Tr. In.
22	6	5		III. Ec. Dis.	23	44			I. Tr. Eg.	13	22			I.* Sh. Eg.	13	22			I.* Sh. Eg.
6	1	5		II. Sh. In.	16	0			III.* Sh. In.	14	31			I.* Tr. Eg.	14	31			I.* Tr. Eg.
1	31	26		III. Ec. Re.	16	54			II.* Sh. In.	8	18	22		I. Ec. Dis.	8	18	22		I. Ec. Dis.
2	39	43		I. Ec. Dis.	17	29	1		I.* Ec. Dis.	8	43			II. Sh. In.	8	43			II. Sh. In.
3	8			III. Oc. Dis.	19	19			II. Tr. In.	9	58	13		III. Ec. Dis.	9	58	13		III. Ec. Dis.
3	33			II. Tr. In.	19	35			III. Sh. Eg.	11	1			II.* Tr. In.	11	1			II.* Tr. In.
3	58			II. Sh. Eg.	19	47			II. Sh. Eg.	11	36			II.* Sh. Eg.	11	36			II.* Sh. Eg.
6	11			I. Oc. Re.	20	59			I. Oc. Re.	11	44			I.* Oc. Re.	11	44			I.* Oc. Re.
6	24			II. Tr. Eg.	21	1			III. Tr. In.	13	21	54		III.* Ec. Re.	13	21	54		III.* Ec. Re.
6	33			III. Oc. Re.	22	10			II. Tr. Eg.	13	51			II.* Tr. Eg.	13	51			II.* Tr. Eg.
23	50			I. Sh. In.	17	0	25		III. Tr. Eg.	14	38			III.* Oc. Dis.	14	38			III.* Oc. Dis.
7	1	5		I. Tr. In.	14	40			I.* Sh. In.	18	0			III.* Oc. Re.	18	0			III.* Oc. Re.
2	10			I. Sh. Eg.	15	54			I.* Tr. In.	18	59	30		IV. Ec. Dis.	18	59	30		IV. Ec. Dis.
3	24			I. Tr. Eg.	17	0			I.* Sh. Eg.	23	22	50		IV. Ec. Re.	23	22	50		IV. Ec. Re.
19	38	48		II. Ec. Dis.	18	12			I.* Tr. Eg.	28	5	31		I. Sh. In.	5	31			I. Sh. In.
21	7	55		I. Ec. Dis.	18	11	33	17	II.* Ec. Dis.	6	8			IV. Oc. Dis.	6	8			IV. Oc. Dis.
8	0	39		I. Oc. Re.	11	57	15		I.* Ec. Dis.	6	40			I. Tr. In.	6	40			I. Tr. In.
1	2			II. Oc. Re.	15	26			I.* Oc. Re.	7	50			I. Sh. Eg.	7	50			I. Sh. Eg.
18	18			I.* Sh. In.	16	52			II.* Oc. Re.	8	58			I. Tr. Eg.	8	58			I. Tr. Eg.
19	33			I. Tr. In.	19	8	40		IV. Sh. In.	10	8			IV. Oc. Re.	10	8			IV. Oc. Re.
20	38			I. Sh. Eg.	9	9			I. Sh. In.	29	2	46	35	I. Ec. Dis.	2	46	35		I. Ec. Dis.
21	52			I. Tr. Eg.	10	22			I. Tr. In.	3	26	43		II. Ec. Dis.	3	26	43		II. Ec. Dis.
9	12	3		III.* Sh. In.	11	28			I.* Sh. Eg.	6	11			I. Oc. Re.	6	11			I. Oc. Re.
14	21			II.* Sh. In.	12	40			I.* Tr. Eg.	8	36			II. Oc. Re.	8	36			II. Oc. Re.
15	36	9		I.* Ec. Dis.	13	17			IV.* Sh. Eg.	23	59			I. Sh. In.	23	59			I. Sh. In.
15	37			III.* Sh. Eg.	20	11			IV. Tr. In.	1	7			I. Tr. In.	1	7			I. Tr. In.
16	49			II.* Tr. In.	20	0	16		IV. Tr. Eg.	2	18			I. Sh. Eg.	2	18			I. Sh. Eg.
17	8			III.* Tr. In.	6	1	1		III. Ec. Dis.	3	26			I. Tr. Eg.	3	26			I. Tr. Eg.
17	14			II.* Sh. Eg.	6	10			II. Sh. In.	21	14	50		I. Ec. Dis.	21	14	50		I. Ec. Dis.
19	7			I. Oc. Re.	6	25	27		I. Ec. Dis.	22	0			II. Sh. In.	22	0			II. Sh. In.
19	40			II. Tr. Eg.	8	34			II. Tr. In.	23	57			III. Sh. In.	23	57			III. Sh. In.
20	33			III. Tr. Eg.	9	4			II. Sh. Eg.	0	14			II. Tr. In.	0	14			II. Tr. In.
10	12	47		I.* Sh. In.	9	25	16		III. Ec. Re.	0	38			I. Oc. Re.	0	38			I. Oc. Re.
14	2			I.* Tr. In.	9	54			I. Oc. Re.	3	4			II. Sh. Eg.	3	4			II. Sh. Eg.
15	6			I.* Sh. Eg.	10	53			III. Oc. Dis.	3	30			III. Sh. Eg.	3	30			III. Sh. Eg.
16	20			I.* Tr. Eg.	11	24			II.* Tr. Eg.	4	35			III. Tr. In.	4	35			III. Tr. In.
11	1	0	17	IV. Ec. Dis.	14	16			III.* Oc. Re.	7	56			III. Tr. Eg.	7	56			III. Tr. Eg.
5	27	16		IV. Ec. Re.	21	3	37		I. Sh. In.	19	35			I.* Sh. In.	19	35			I.* Sh. In.
8	57	20		II. Ec. Dis.	4	49			I. Tr. In.	20	47			I. Sh. Eg.	20	47			I. Sh. Eg.
										21	53			I. Tr. Eg.	21	53			I. Tr. Eg.

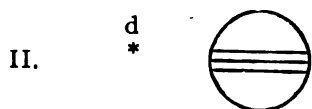
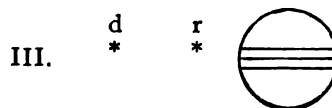
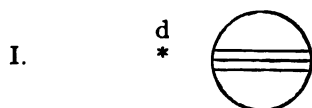
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.

Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

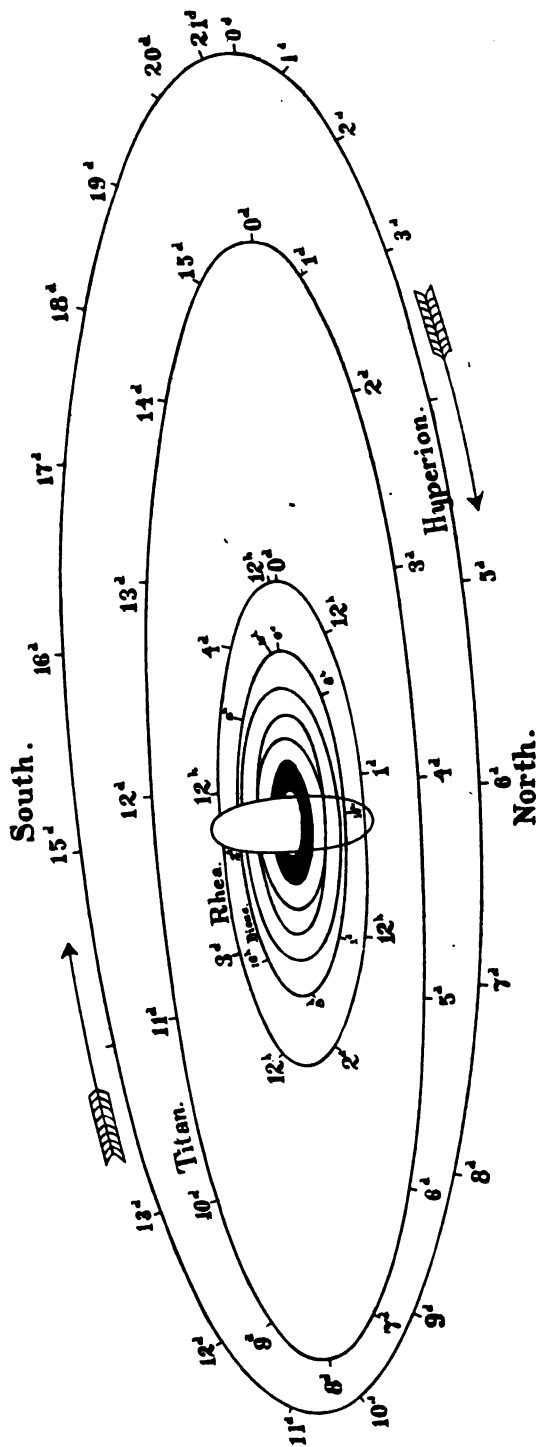
[Eph os]

WASHINGTON MEAN TIME.

DECEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.*Configurations at 15^h 0^m for an Inverting Telescope.*

Day.	West.	East.
1		○ '1 '2 3' 4'
2	○ 3' 0 2'	○ 4' '1 ●
3	3' '2 4' 1'	○
4	'3 4'	○ '1
5	4' '3 1'	○ 2'
6	4' 2'	○ '3 1
7	'4 '1	○ '3
8	'4	○ 1' '2 3'
9	'4 '1	○ '2 3'
10	○ 1' 3' '2	○
11	'3	○ '2 1 '4 ●
12	'3 1'	○ 2' '4
13	2' '3 1	○ '4
14	'2 1	○ '3 '4
15		○ 1' '2 3' '4
16	'1	○ '2 3' 4'
17	'3	○ 1' 4'
18	3'	○ 4' '1 ● '2 ●
19	'3 1'	○ 4' 2'
20	4' 2'	○ '3 '1
21	4' '2 1'	○ '3
22	4' '1	○ '1 2 3'
23	4' '1	○ '2 3'
24	'4 2' 3'	○ 1'
25	'4 3'	○ '1 ● '2 ●
26	'4 '3 1'	○ '2
27	'4 2'	○ '1 '3 ●
28	'2 1'	○ 4' '3
29		○ '1 4 3'
30	'1	○ 2' 3' '4
31	2' 3'	○ 1' '4



NAMES OF THE SATELLITES.

- I. Mimas.
- II. Enceladus.
- III. Tethys.
- IV. Dione.
- V. Rhea.
- VI. Titan.
- VII. Hyperion.
- VIII. Iapetus.

MEAN SYNODIC PERIODS.

	d	h
I.	0	22.6
II.	1	8.9
III.	1	21.3
IV.	2	17.7
V.	4	12.5
VI.	15	23.3
VII.	21	7.6
VIII.	79	22.1

APPARENT ORBITS OF THE SEVEN INNER SATELLITES OF SATURN,

AT DATE OF OPPOSITION, SEPTEMBER 29, 1908,

AS SEEN IN AN INVERTING TELESCOPE.

WASHINGTON MEAN TIME OF GREATEST ELONGATION, ETC.

In the diagram on the preceding page, the points of the orbits marked "o" are those of the eastern elongation, as seen in an inverting telescope. The times of these elongations may be found from the following tables, and the apparent position of a satellite at any other time may be marked on the diagram by setting off on the proper orbit the elapsed interval in days and hours since the last eastern elongation. Mimas can be seen only within a few hours of each elongation, and the time of every elongation visible at Washington is given. The time of any elongation not given in the tables may be found from those given by adding or subtracting the proper multiple of the mean synodic period. The following abbreviations are used in the tables:

E., East Elongation.

I., Inferior Conjunction.

W., West Elongation.

S., Superior Conjunction.

MIMAS.

Greatest Elongations Visible at Washington.

July 10 12.7 E. 16 15.8 W. 17 14.4 W. 18 13.0 W. 19 11.7 W.	Aug. 19 14.0 W. 20 12.6 W. 21 11.2 W. 22 9.8 W. 26 15.5 E.	Sept. 16 8.9 E. 17 7.5 E. 19 16.2 W. 20 14.8 W. 21 13.4 W.	Oct. 8 12.5 W. 9 11.1 W. 10 9.7 W. 11 8.3 W. 12 6.9 W.	Nov. 1 13.1 E. 2 11.7 E. 3 10.3 E. 4 8.9 E. 5 7.5 E.	Nov. 28 9.7 W. 29 8.3 W. 30 6.9 W. Dec. 1 5.6 W. 5 11.3 E.
24 16.0 E. 25 14.6 E. 26 13.2 E. 27 11.8 E.	27 14.1 E. 28 12.7 E. 29 11.3 E. 30 9.9 E.	22 12.0 W. 23 10.6 W. 24 9.3 W. 25 7.9 W.	14 15.4 E. 15 14.0 E. 16 12.6 E. 17 11.2 E.	6 6.2 E. 9 13.4 W. 10 12.0 W. 11 10.6 W.	6 10.0 E. 7 8.6 E. 8 7.2 E. 9 5.8 E.
Aug. 1 16.3 W.	Sept. 3 15.8 W.	27 16.3 E.	18 9.8 E.	12 9.2 W.	13 11.6 W.
2 14.9 W. 3 13.5 W. 4 12.1 W. 5 10.7 W. 9 16.4 E.	4 14.4 W. 5 13.0 W. 6 11.6 W. 7 10.2 W. 8 8.8 W.	28 14.9 E. 29 13.5 E. 30 12.1 E. Oct. 1 10.7 E. 2 9.4 E.	19 8.4 E. 20 7.1 E. 23 14.3 W. 24 12.9 W. 25 11.5 W.	13 7.8 W. 14 6.4 W. 17 13.6 E. 18 12.2 E. 19 10.8 E.	14 10.2 W. 15 8.8 W. 16 7.5 W. 17 6.1 W. 22 10.5 E.
10 15.0 E. 11 13.6 E. 12 12.2 E. 13 10.9 E. 18 15.4 W.	11 15.9 E. 12 14.5 E. 13 13.1 E. 14 11.7 E. 15 10.3 E.	3 8.0 E. 4 6.6 E. 5 16.6 W. 6 15.3 W. 7 13.9 W.	26 10.1 W. 27 8.8 W. 28 7.4 W. 29 6.0 W. 31 14.5 E.	20 9.4 E. 21 8.0 E. 22 6.7 E. 26 12.5 W. 27 11.1 W.	23 9.1 E. 24 7.8 E. 25 6.4 E. 30 10.8 W. 31 9.4 W.

ENCELADUS.

Jan. 1 2.8 E. 2 11.7 E. 3 20.6 E. 5 5.4 E. 6 14.3 E.	June 24 13.5 E. 25 22.4 E. 27 7.3 E. 28 16.1 E. 30 1.0 E.	July 8 6.4 E. 9 15.2 E. 11 0.1 E. 12 9.0 E. 13 17.9 E.	July 21 23.2 E. 23 8.1 E. 24 17.0 E. 26 1.8 E. 27 10.7 E.	Aug. 4 16.0 E. 6 0.9 E. 7 9.8 E. 8 18.6 E. 10 3.5 E.	Aug. 18 8.8 E. 19 17.7 E. 21 2.6 E. 22 11.4 E. 23 20.3 E.
June 19 1.9 E. 20 10.8 E. 21 19.7 E. 23 4.6 E.	July 1 9.9 E. 2 18.8 E. 4 3.7 E. 5 12.6 E. 6 21.5 E.	15 2.8 E. 16 11.6 E. 17 20.5 E. 19 5.4 E. 20 14.3 E.	28 19.6 E. 30 4.5 E. 31 13.4 E. Aug. 1 22.2 E. 3 7.1 E.	11 12.4 E. 12 21.3 E. 14 6.2 E. 15 15.0 E. 16 23.9 E.	25 5.2 E. 26 14.1 E. 27 22.9 E. 29 7.8 E. 30 16.7 E.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

ENCELADUS—(Concluded).

Sept. 1 1.6 E.	Sept. 21 14.7 E.	Oct. 12 3.9 E.	Nov. 1 17.1 E.	Nov. 22 6.3 E.	Dec. 12 19.6 E.
2 10.4 E.	22 23.6 E.	13 12.8 E.	3 1.9 E.	23 15.2 E.	14 4.5 E.
3 19.3 E.	24 8.5 E.	14 21.6 E.	4 10.8 E.	25 0.1 E.	15 13.4 E.
5 4.2 E.	25 17.3 E.	16 6.5 E.	5 19.7 E.	26 9.0 E.	16 22.3 E.
6 13.1 E.	27 2.2 E.	17 15.4 E.	7 4.6 E.	27 17.8 E.	18 7.2 E.
7 22.0 E.	28 11.1 E.	19 0.3 E.	8 13.5 E.	29 2.7 E.	19 16.0 E.
9 6.8 E.	29 20.0 E.	20 9.1 E.	9 22.4 E.	30 11.6 E.	21 0.9 E.
10 15.7 E.	Oct. 1 4.9 E.	21 18.0 E.	11 7.2 E.	Dec. 1 20.5 E.	22 9.8 E.
12 0.6 E.	2 13.7 E.	23 2.9 E.	12 16.1 E.	3 5.4 E.	23 18.7 E.
13 9.5 E.	3 22.6 E.	24 11.8 E.	14 1.0 E.	4 14.3 E.	25 3.6 E.
14 18.3 E.	5 7.5 E.	25 20.7 E.	15 9.9 E.	5 23.2 E.	26 12.5 E.
16 3.2 E.	6 16.4 E.	27 5.5 E.	16 18.8 E.	7 8.0 E.	27 21.4 E.
17 12.1 E.	8 1.2 E.	28 14.4 E.	18 3.6 E.	8 16.9 E.	29 6.3 E.
18 21.0 E.	9 10.1 E.	29 23.3 E.	19 12.5 E.	10 1.8 E.	30 15.2 E.
20 5.8 E.	10 19.0 E.	31 8.2 E.	20 21.4 E.	11 10.7 E.	32 0.1 E.

TETHYS.

Jan. 1 15.0 E.	July 6 14.3 E.	Aug. 11 11.1 E.	Sept. 16 7.7 E.	Oct. 22 4.2 E.	Nov. 27 0.9 E.
3 12.3 E.	8 11.6 E.	13 8.4 E.	18 5.0 E.	24 1.5 E.	28 22.2 E.
5 9.6 E.	10 8.9 E.	15 5.7 E.	20 2.2 E.	25 22.8 E.	30 19.5 E.
7 6.9 E.	12 6.2 E.	17 3.0 E.	21 23.5 E.	27 20.1 E.	Dec. 2 16.8 E.
9 4.3 E.	14 3.6 E.	19 0.3 E.	23 20.8 E.	29 17.4 E.	4 14.2 E.
June 12 1.3 E.	16 0.9 E.	20 21.6 E.	25 18.1 E.	31 14.7 E.	6 11.5 E.
13 22.6 E.	17 22.2 E.	22 18.9 E.	27 15.4 E.	Nov. 2 12.0 E.	8 8.8 E.
15 19.9 E.	19 19.5 E.	24 16.2 E.	29 12.7 E.	4 9.3 E.	10 6.1 E.
17 17.2 E.	21 16.8 E.	26 13.5 E.	Oct. 1 10.0 E.	6 6.6 E.	12 3.4 E.
19 14.5 E.	23 14.1 E.	28 10.7 E.	3 7.3 E.	8 3.9 E.	14 0.7 E.
21 11.8 E.	25 11.4 E.	30 8.0 E.	5 4.6 E.	10 1.2 E.	15 22.0 E.
23 9.2 E.	27 8.7 E.	Sept. 1 5.3 E.	7 1.9 E.	11 22.5 E.	17 19.3 E.
25 6.5 E.	29 6.0 E.	3 2.6 E.	8 23.2 E.	13 19.8 E.	19 16.7 E.
27 3.8 E.	31 3.3 E.	4 23.9 E.	10 20.4 E.	15 17.1 E.	21 14.0 E.
29 1.1 E.	Aug. 2 0.6 E.	6 21.2 E.	12 17.7 E.	17 14.4 E.	23 11.3 E.
30 22.4 E.	3 21.9 E.	8 18.5 E.	14 15.0 E.	19 11.7 E.	25 8.6 E.
July 2 19.7 E.	5 19.2 E.	10 15.8 E.	16 12.3 E.	21 9.0 E.	27 5.9 E.
4 17.0 E.	7 16.5 E.	12 13.1 E.	18 9.6 E.	23 6.3 E.	29 3.2 E.
	9 13.8 E.	14 10.4 E.	20 6.9 E.	25 3.6 E.	31 0.6 E.

DIONE.

Jan. 1 0.9 E.	July 8 0.1 E.	Aug. 12 14.0 E.	Sept. 17 3.5 E.	Oct. 22 17.0 E.	Nov. 27 6.7 E.
3 18.6 E.	10 17.8 E.	15 7.6 E.	19 21.2 E.	25 10.7 E.	30 0.4 E.
6 12.4 E.	13 11.5 E.	18 1.3 E.	22 14.8 E.	28 4.3 E.	Dec. 2 18.1 E.
9 6.1 E.	16 5.2 E.	20 19.0 E.	25 8.5 E.	30 22.0 E.	5 11.8 E.
11 23.8 E.	18 22.9 E.	23 12.6 E.	28 2.1 E.	Nov. 2 15.6 E.	8 5.5 E.
June 18 20.3 E.	21 16.6 E.	26 6.3 E.	30 19.8 E.	5 9.3 E.	10 23.2 E.
21 14.0 E.	24 10.3 E.	28 23.9 E.	Oct. 3 13.4 E.	8 3.0 E.	13 16.9 E.
24 7.7 E.	27 4.0 E.	31 17.6 E.	6 7.1 E.	10 20.7 E.	16 10.6 E.
27 1.4 E.	29 21.6 E.	Sept. 3 11.3 E.	9 0.7 E.	13 14.3 E.	19 4.3 E.
29 19.1 E.	Aug. 1 15.3 E.	6 4.9 E.	11 18.4 E.	16 8.0 E.	21 22.0 E.
July 2 12.8 E.	4 9.0 E.	8 22.6 E.	14 12.0 E.	19 1.7 E.	24 15.7 E.
5 6.5 E.	7 2.6 E.	11 16.2 E.	17 5.7 E.	21 19.4 E.	27 9.4 E.
	9 20.3 E.	14 9.9 E.	19 23.4 E.	24 13.0 E.	30 3.1 E.

RHEA.				TITAN.				HYPERION.													
	d	h			d	h			d	h			d	h							
Jan.	1	10.3	E.	Sept.	24	3.0	E.	Jan.	4	9.7	E.	Oct.	6	4.6	I.	Jan.	3.9	S.	Sept.	10.4	W.
	5	22.8	E.		28	15.4	E.		8	13.5	I.		10	0.9	W.		9.9	E.		14.9	S.
	10	11.3	E.	Oct.	3	3.7	E.						13	20.5	S.		16.1	I.		21.1	E.
July	4	20.3	E.		7	16.0	E.	July	22	11.4	W.		17	23.0	E.		20.7	W.		27.2	I.
	9	8.8	E.		12	4.4	E.		26	7.3	S.		22	2.2	I.				Oct.	1.6	W.
	13	21.2	E.		16	16.7	E.		30	10.2	E.		25	22.5	W.	June	13.2	I.		6.1	S.
	18	9.6	E.		21	5.0	E.	Aug.	3	13.5	I.		29	18.2	S.		17.7	W.		12.3	E.
	22	22.0	E.		25	17.4	E.		7	9.8	W.	Nov.	2	20.7	E.		22.2	S.		18.4	I.
	27	10.4	E.		30	5.7	E.		11	5.7	S.		7	0.0	I.		28.3	E.		22.8	W.
	31	22.8	E.	Nov.	3	18.1	E.		15	8.4	E.		10	20.4	W.	July	4.4	I.		27.3	S.
Aug.	5	11.2	E.		8	6.4	E.		19	11.7	I.		14	16.1	S.		8.9	W.	Nov.	2.5	E.
	9	23.6	E.		12	18.8	E.		23	7.9	W.		18	18.7	E.		13.4	S.		8.6	I.
	14	12.0	E.		17	7.2	E.		27	3.7	S.		22	22.1	I.		19.6	E.		13.1	W.
	19	0.4	E.		21	19.6	E.		31	6.3	E.		26	18.7	W.		25.6	I.		17.6	S.
	23	12.7	E.		26	8.0	E.	Sept.	4	9.5	I.		30	14.5	S.		30.1	W.		23.8	E.
	28	1.0	E.		30	20.4	E.		8	5.7	W.	Dec.	4	17.2	E.	Aug.	3.6	S.		29.9	I.
Sept.	1	13.4	E.	Dec.	5	8.8	E.		12	1.4	S.		8	20.6	I.		9.8	E.	Dec.	4.4	W.
	6	1.7	E.		9	21.2	E.		16	4.0	E.		12	17.2	W.		15.8	I.		8.9	S.
	10	14.1	E.		14	9.7	E.		20	7.1	I.		16	13.1	S.		20.3	W.		15.2	E.
	15	2.4	E.		18	22.1	E.		24	3.3	W.		20	15.7	E.		24.8	S.		21.3	I.
	19	14.7	E.		23	10.6	E.		27	23.0	S.		24	19.2	I.		30.9	E.		25.8	W.
					27	23.0	E.	Oct.	2	1.5	E.		28	15.9	W.	Sept.	6.0	I.		30.3	S.

IAPETUS.

Jan.	d	17.0	E.	June	d	27.2	E.	Aug.	d	6.7	W.	Sept.	d	14.2	E.	Oct.	d	24.0	W.	Dec.	d	1.5	E.
Feb.		6.6	I.	July		17.7	I.			25.9	S.	Oct.		4.2	I.	Nov.		12.1	S.			21.8	I.

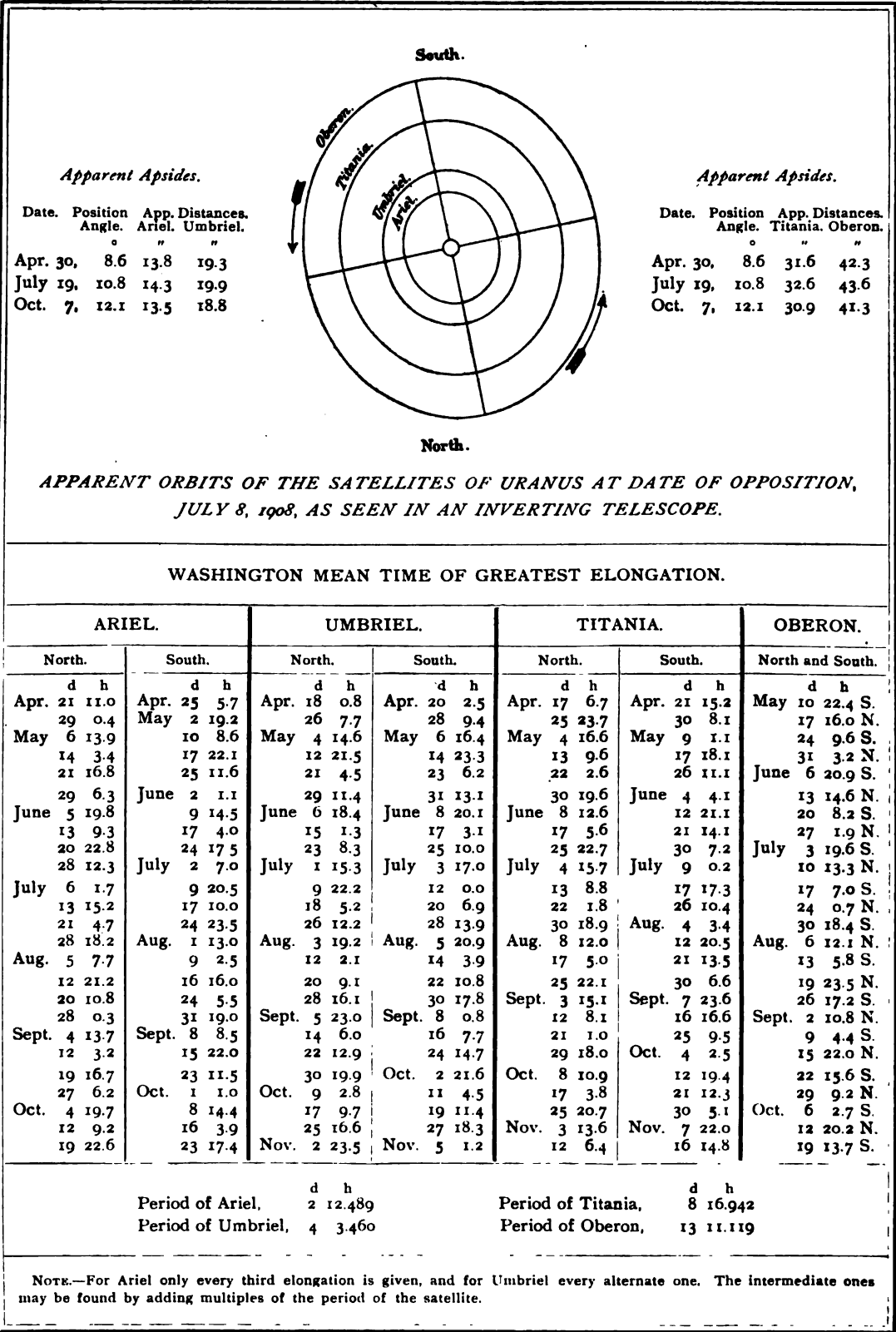
THE APPARENT ELEMENTS OF SATURN'S RINGS.

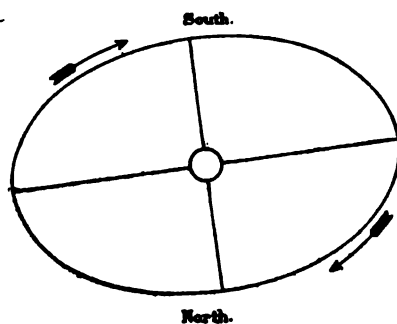
Washington Mean Noon.	a	b	p	l	l'	Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on—	
						Equator.	Ecliptic.
Jan. 1	38.26	+0.13	4 43.3	+0 11.3	-2 23.4	46 57.1	4 18.2
21	37.16	-0.38	4 35.8	-0 35.1	2 41.4	48 17.6	5 38.8
Feb. 10	36.33	0.99	4 25.8	1 33.6	2 59.3	50 3.0	7 24.3
Mar. 1	35.83	1.66	4 14.1	2 39.4	3 17.3	52 5.4	9 26.8
21	35.67	2.36	4 1.3	3 47.9	3 35.2	54 16.6	11 38.1
Apr. 10	35.85	-3.07	3 48.1	-4 54.8	-3 53.2	56 28.6	13 50.1
30	36.36	3.76	3 35.4	5 55.9	4 11.2	58 33.7	15 55.3
May 20	37.18	4.40	3 23.5	6 47.6	4 29.1	60 24.3	17 46.0
June 9	38.27	4.96	3 14.2	7 27.0	4 47.1	61 53.0	19 14.8
29	39.58	5.40	3 8.2	7 50.5	5 5.0	62 53.0	20 14.9
July 19	41.01	-5.67	3 5.5	-7 56.8	-5 22.9	63 18.8	20 40.7
Aug. 8	42.38	5.72	3 6.6	7 45.6	5 40.8	63 8.0	20 30.0
28	43.52	5.53	3 11.4	7 18.2	5 58.7	62 22.5	19 44.5
Sept. 17	44.20	5.13	3 19.0	6 39.6	6 16.6	61 10.9	18 33.0
Oct. 7	44.29	4.59	3 27.7	5 57.2	6 34.5	59 47.5	17 9.7
27	43.75	-4.06	3 35.7	-5 19.9	-6 52.3	58 29.9	15 52.2
Nov. 16	42.71	3.67	3 41.3	4 56.0	7 10.1	57 34.7	14 57.0
Dec. 6	41.35	3.48	3 43.5	4 49.8	7 27.9	57 13.1	14 35.5
26	39.92	3.52	3 41.8	5 3.8	7 45.7	57 29.6	14 52.1
31	39.57	-3.57	3 40.8	-5 10.4	-7 50.1	57 39.9	15 2.4

The factor to be multiplied by *a* and *b* to obtain the axes of—

The inner ellipse of the outer ring = 0.8801,	log factor = 9.9445
The outer ellipse of the inner ring = 0.8599,	log factor = 9.9344
The inner ellipse of the inner ring = 0.6650,	log factor = 9.8228
The inner ellipse of the dusky ring = 0.5486,	log factor = 9.7392

NOTE.—The positive sign of *l* indicates that the visible surface of the ring is the northern one.





Date.	Position Angle of Apsis.	Apparent Distance at Apsis.
	°	"
Jan. 1,	96.9	16.8
Apr. 10,	95.0	16.2
Sept. 21,	101.0	16.1
Dec. 30,	99.8	16.8

*APPARENT ORBIT OF THE SATELLITE OF NEPTUNE AT DATE OF OPPOSITION,
JANUARY 5, 1908, AS SEEN IN AN INVERTING TELESCOPE.*

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

East.	West.	East.	West.	East.	West.
d h	d h	d h	d h	d h	d h
Jan.	Jan. 2 2.8	Mar. 21 11.8	Mar. 24 10.4	Oct. 13 1.8	Oct. 16 0.3
5 1.4	8 0.0	27 8.9	30 7.4	18 22.8	21 21.3
10 22.6	13 21.1	Apr. 2 5.9	5 4.4	24 19.8	27 18.4
16 19.7	19 18.2	8 3.0	11 1.5	30 16.9	Nov. 2 15.4
22 16.8	25 15.4	14 0.0	16 22.5	Nov. 5 13.9	8 12.5
		19 21.0	22 19.5	11 11.0	14 9.5
Feb. 28 13.9	Feb. 31 12.5	25 18.0	28 16.5	17 8.1	20 6.6
3 11.1	6 9.6	May 1 15.0	4 13.5	23 5.2	26 3.7
9 8.2	12 6.7	Sept.	Sept. 16 15.3	29 2.3	Dec. 2 0.8
15 5.3	18 3.8	13 16.8	22 12.3	Dec. 4 23.4	7 21.9
21 2.4	24 1.0	19 13.8	28 9.3	10 20.5	13 19.0
Mar. 26 23.5	Mar. 29 22.1	25 10.8	Oct. 4 6.3	16 17.6	19 16.1
3 20.6	6 19.1	Oct. 1 7.8	10 3.3	22 14.7	25 13.3
9 17.7	12 16.2	7 4.8		28 11.8	31 10.4
15 14.8	18 13.3				

The above times are the instants of each passage of the satellite through the apsis of its apparent orbit. The position of the satellite at any other time may be found by measuring around the orbit from the apsis last passed through, bearing in mind that the radius vector of the satellite describes equal areas in equal times.

The period of the satellite of Neptune is 5^d 21^h.044.

NOTE.—In the preceding diagrams the central circle represents the planet and is on the same scale as the orbits.

WASHINGTON MEAN TIME.

PLANETARY CONFIGURATIONS.

Jan.	d	h	m				
	2	1	-	☿	Greatest Hel. Lat. S.		
	2	5	-	⊕	in Perihelion.		
	2	17	37	♂	☿	- 2 7	
	3	5	-	☾	Total eclip. invis. at Wash.		
	3	5	41	♂	☿	- 0 30	
	3	20	-	♂	♂		
	4	12	-	♂	♂		
	5	3	12	♂	♀	+ 0 45	
	7	15	-	♂	♂	- 1 18	
	7	20	12	♂	♂	+ 2 57	
	8	4	59	♂	♂	+ 5 8	
	13	18	-	♂	♂	Superior.	
	16	16	2	♂	♂	- 0 44	
	18	21	48	♂	♂	- 1 33	
	21	3	-	♂	Greatest Hel. Lat. S.		
	26	20	-	♂	in ☿		
	29	4	-	♂	♂		
	30	19	41	♂	♂	- 0 20	
Feb.	2	13	19	♂	♂	+ 2 27	
	3	23	2	♂	♀	+ 3 48	
	4	9	54	♂	♂	+ 3 2	
	6	0	13	♂	♂	+ 5 49	
	9	4	-	♂	♂	in ☿	
	10	3	-	♂	♀	+ 1 18	
	12	20	50	♂	♂	- 0 42	
	12	21	-	♂	Greatest elong. E. 18	9	
	13	18	-	♂	in Perihelion.		
	14	21	9	♂	♂	- 1 12	
	18	19	-	♂	Stationary.		
	24	1	-	♂	Greatest Hel. Lat. N.		
	27	7	39	♂	♂	- 0 7	
	27	8	-	♂	in ☿		
	28	11	-	♂	♂	Inferior.	
Mar.	1	13	22	♂	♂	+ 8 7	
	3	2	1	♂	♂	+ 3 4	
	4	20	21	♂	♀	+ 5 48	
	5	21	43	♂	♂	+ 5 26	
	11	2	47	♂	♂	- 0 50	
	11	19	-	♂	Stationary.		
	12	22	58	♂	♂	- 1 7	
	18	12	-	♂	in ☿		
	20	7	-	☾	enters ♍, Spring com.		
	20	12	-	♂	♂		
	22	20	-	♂	♂	Stationary.	
	25	16	11	♂	♂	+ 0 11	
	26	17	-	♂	Greatest elong. W. 27	49	
	28	18	-	♂	in Aphelion.		
	29	9	16	♂	♂	+ 2 48	
	29	21	-	♂	Stationary.		
	30	17	56	♂	♂	+ 3 7	
	31	19	-	♂	in Perihelion.		
Apr.	1	13	-	☾	☾		
Apr.	3	20	15	♂	♂	+ 5 52	
	3	20	20	♂	♂	+ 4 15	
	3	22	-	♂	♂	+ 1 37	
	6	8	-	☾	☾		
	7	10	31	♂	♂	- 1 5	
	9	5	46	♂	♂	- 1 20	
	14	4	-	♂	♂	- 0 28	
	18	3	-	♂	Greatest Hel. Lat. S.		
	20	20	-	♂	Stationary.		
	21	22	4	♂	♂	+ 0 27	
	22	20	-	♂	Greatest Hel. Lat. N.		
	24	12	-	☾	☾		
	26	2	-	♂	Greatest elong. E. 45	37	
	27	7	42	♂	♂	+ 3 12	
	29	3	6	♂	♂	+ 3 38	
May	2	18	44	♂	♂	+ 2 40	
	3	16	51	♂	♀	+ 4 15	
	4	19	42	♂	♂	- 1 20	
	6	17	34	♂	♂	- 1 47	
	7	1	-	♂	♂	Superior.	
	7	3	-	♂	in ☿		
	11	17	-	♂	in Perihelion.		
	19	3	26	♂	♂	+ 0 35	
	20	20	-	♂	♂	+ 4 8	
	22	0	-	♂	Greatest Hel. Lat. N.		
	24	18	39	♂	♂	+ 3 15	
	29	5	-	♂	Greatest brilliancy.		
	31	8	44	♂	♂	+ 2 20	
	31	15	58	♂	♂	+ 0 59	
June	1	5	19	♂	♂	- 1 30	
	1	17	35	♂	♀	+ 1 12	
	3	8	48	♂	♂	- 2 15	
	6	23	-	♂	♂	+ 0 19	
	7	8	-	♂	Greatest elong. E. 23	59	
	10	11	-	♂	♂	+ 1 37	
	11	17	-	♂	♂	+ 1 53	
	13	4	-	♂	Stationary.		
	14	12	-	♂	in ☿		
	15	10	4	♂	♂	+ 0 33	
	16	20	-	♂	♂	- 1 42	
	17	21	-	♂	in ☿		
	20	16	-	♂	Stationary.		
	21	3	-	☾	enters ♊, Summer com.		
	21	3	22	♂	♂	+ 3 13	
	22	3	-	♂	♂	- 2 5	
	24	17	-	♂	in Aphelion.		
	27	23	-	☾	Ann. ec. vis. as par. at Wash.		
	28	14	25	♂	♂	- 1 36	
	28	16	26	♂	♂	- 4 36	
	28	20	18	♂	♂	- 3 37	
	29	11	39	♂	♂	- 0 39	
	30	11	-	♂	♂	- 3 17	

WASHINGTON MEAN TIME.

PLANETARY CONFIGURATIONS.

			d	h	m				d	h	m
July	1	1	50			♂ ♃	.....	♂ - 2 40	Sept. 22	18	-
	1	10	-			♂ ♃	.....	♂ - 4 9	23	18	13
	2	2	-			♂ ♃	.....	♂ - 7 3	26	20	35
	3	14	-			♂ ♃	.....	♂ - 2 50	29	14	-
	4	5	-			♂ ♃	.....	♂ + 0 46	Oct. 2	18	49
	5	10	-			♂ ♃	.....	♂ - 25 34	4	5	-
	6	10	-			♂ ♃	.....	♂ + 2 31	5	23	-
	6	18	-			♂ ♃	.....	♂ + 1 12	8	9	59
	12	18	21			♂ ♃	.....	♂ - 0 27	9	1	-
	14	21	-			♂ ♃	.....	♂ - 1 12	10	2	-
	15	2	-			♂ ♃	.....	♂ - 0 36	11	1	-
	15	5	-			♂ ♃	.....	♂ - 2 24	13	11	-
	18	11	3			♂ ♃	.....	♂ - 2 24	15	21	28
	22	7	-			♂ ♃	.....	♂ - 5 57	16	14	-
	22	23	-			♂ ♃	.....	♂ - 0 44	19	23	-
Aug.	25	2	50			♂ ♃	.....	♂ - 6 10	20	0	32
	25	5	-			♂ ♃	.....	♂ - 4 26	20	14	36
	25	18	27			♂ ♃	.....	♂ - 4 24	22	13	40
	25	22	36			♂ ♃	.....	♂ - 5 57	24	23	30
	27	1	-			♂ ♃	.....	♂ - 0 44	27	23	-
	27	19	-			♂ ♃	.....	♂ - 2 7	30	1	-
	28	6	4			♂ ♃	.....	♂ - 2 7	Nov. 3	16	-
	28	19	33			♂ ♃	.....	♂ - 3 2	4	16	2
	30	0	-			♂ ♃	.....	♂ - 2 42	5	15	-
	3	2	-			♂ ♃	.....	♂ - 2 36	11	18	-
	7	17	-			♂ ♃	.....	♂ - 2 36	12	5	50
	9	3	22			♂ ♃	.....	♂ - 1 19	13	2	-
	11	7	-			♂ ♃	.....	♂ - 4 20	13	23	-
	13	9	-			♂ ♃	.....	♂ - 3 6	16	16	34
	13	18	-			♂ ♃	.....	♂ - 4 0	19	22	34
Sept.	14	18	44			♂ ♃	.....	♂ - 1 55	20	10	40
	17	3	-			♂ ♃	.....	♂ + 1 17	21	18	8
	18	0	-			♂ ♃	.....	♂ + 1 17	26	8	58
	18	13	-			♂ ♃	.....	♂ + 1 17	30	6	-
	19	22	-			♂ ♃	.....	♂ + 2 56	Dec. 1	21	3
	20	3	-			♂ ♃	.....	♂ - 2 38	3	13	-
	21	13	-			♂ ♃	.....	♂ - 4 22	5	9	-
	22	4	45			♂ ♃	.....	♂ - 2 58	7	4	-
	22	6	7			♂ ♃	.....	♂ - 0 56	7	10	-
	23	6	-			♂ ♃	.....	♂ - 1 4	9	13	53
	23	13	25			♂ ♃	.....	♂ - 2 38	14	5	39
	25	23	57			♂ ♃	.....	♂ - 2 58	17	16	-
	26	17	30			♂ ♃	.....	♂ - 0 56	19	8	48
	3	12	-			♂ ♃	.....	♂ - 1 4	20	7	29
	5	11	46			♂ ♃	.....	♂ - 1 25	21	13	-
Sept.	10	11	-			♂ ♃	.....	♂ - 3 4	22	17	56
	11	2	37			♂ ♃	.....	♂ - 46 2	22	19	-
	14	4	-			♂ ♃	.....	♂ - 2 7	23	11	-
	18	13	34			♂ ♃	.....	♂ - 5 0	23	19	31
	20	14	6			♂ ♃	.....	♂ - 3 4	25	3	-
	20	16	-			♂ ♃	.....	♂ - 3 6	29	3	6
	21	20	-			♂ ♃	.....	♂ - 13 -	30	13	-
	21	20	-			♂ ♃	.....	♂ - 13 -			
	22	7	11			♂ ♃	.....	♂ - 13 -			
						♂ ♃	.....	♂ - 13 -			

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ .	Longitude.	
				From Washington.	From Greenwich.
	° ' "	° ' "		h m s	h m s
Abastuman	+ 41 42 24	- 11 35.5	9.999 351	- 7 59 41	- 2 51 25
Åbo	+ 60 26 56.8	- 10 2.1	9.998 887	- 6 37 22.20	- 1 29 6.42
Adelaide	- 34 55 38.5	+ 10 56.8	9.999 520	+ 9 37 23.92	- 9 14 20.30
Albany (<i>New Obs.</i>)	+ 42 39 12.7	- 11 38.0	9.999 326	- 0 13 9.0	+ 4 55 6.8
Albany (<i>Old Obs.</i>)	+ 42 39 49.5	- 11 38.0	9.999 326	- 0 13 15.79	+ 4 54 59.99
Alfred (<i>N. Y.</i>)	+ 42 15 19.8	- 11 37.0	9.999 337	+ 0 2 51.37	+ 5 11 7.15
Algiers (<i>Old Obs.</i>)	+ 36 44 0	- 11 10.8	9.999 476	- 5 20 32.6	- 0 12 16.8
Algiers (<i>New Obs.</i>)	+ 36 47 50	- 11 11.3	9.999 474	- 5 20 24.33	- 0 12 8.55
Allegheny	+ 40 27 41.6	- 11 31.3	9.999 383	+ 0 11 47.15	+ 5 20 2.93
Altona	+ 53 32 45.3	- 11 10.2	9.999 049	- 5 48 2.02	- 0 39 46.24
Amherst	+ 42 22 17.1	- 11 37.3	9.999 334	- 0 18 11.11	+ 4 50 4.67
Annapolis	+ 38 58 53.5	- 11 24.5	9.999 420	- 0 2 19.29	+ 5 5 56.49
Ann Arbor	+ 42 16 48.0	- 11 37.0	9.999 336	+ 0 26 39.41	+ 5 34 55.19
Arequipa (<i>Harvard</i>)	- 16 24	+ 6 18.4	9.999 884	- 0 22 46	+ 4 45 30
Armagh	+ 54 21 12.7	- 11 4.2	9.999 029	- 4 41 40.4	+ 0 26 35.4
Athens	+ 37 58 20.7	- 11 18.9	9.999 445	- 6 43 8.70	- 1 34 52.92
Bamberg	+ 49 53 6.0	- 11 30.7	9.999 141	- 5 51 49.43	- 0 43 33.65
Beloit	+ 42 30 8.4	- 11 37.6	9.999 331	+ 0 47 51.5	+ 5 56 7.3
Bergen	+ 60 23 54	- 10 2.7	9.998 888	- 5 29 28.53	- 0 21 12.75
Berkeley	+ 37 52 23.6	- 11 18.3	9.999 448	+ 3 0 46.94	+ 8 9 2.72
Berlin	+ 52 30 16.7	- 11 17.1	9.999 075	- 6 1 50.63	- 0 53 34.85
Berlin (<i>Urania</i>)	+ 52 31 30.7	- 11 17.0	9.999 075	- 6 1 43.23	- 0 53 27.45
Berne	+ 46 57 8.7	- 11 39.0	9.999 216	- 5 38 1.51	- 0 29 45.73
Besançon	+ 47 14 59.0	- 11 38.5	9.999 208	- 5 32 12.95	- 0 23 57.17
Bethlehem	+ 40 36 23.1	- 11 31.9	9.999 379	- 0 6 43.93	+ 5 1 31.85
Birr Castle	+ 53 5 47.0	- 11 13.3	9.999 060	- 4 36 34.9	+ 0 31 40.9
Bogota	+ 4 36 15.4	- 1 51.5	9.999 991	- 0 11 21.58	+ 4 56 54.20
Bologna	+ 44 29 54	- 11 40.3	9.999 279	- 5 53 40.7	- 0 45 24.9
Bombay	+ 18 53 45	- 7 8.1	9.999 847	- 9 59 31.52	- 4 51 15.74
Bonn	+ 50 43 45.0	- 11 26.9	9.999 120	- 5 36 39.00	- 0 28 23.22
Bordeaux	+ 44 50 7.2	- 11 40.4	9.999 271	- 5 6 10.24	+ 0 2 5.54
Boston (<i>University</i>)	+ 42 21 32.5	- 11 37.2	9.999 334	- 0 24 0.8	+ 4 44 15.0
Bothkamp	+ 54 12 9.6	- 11 5.3	9.999 033	- 5 48 47.0	- 0 40 31.2
Breslau	+ 51 6 55.8	- 11 25.0	9.999 110	- 6 16 24.57	- 1 8 8.79
Brisbane	- 27 28 0.0	+ 9 32.2	9.999 689	+ 8 39 37.82	- 10 12 6.40
Brussels (<i>Uccle</i>)	+ 50 47 53	- 11 26.6	9.999 118	- 5 25 42.7	- 0 17 26.9
Brussels (<i>Old Obs.</i>)	+ 50 51 10.7	- 11 26.3	9.999 117	- 5 25 44.51	- 0 17 28.73
Budapest	+ 47 29 34.7	- 11 38.0	9.999 202	- 6 24 31.1	- 1 16 15.3
Cairo	+ 30 4 38.2	- 10 6.5	9.999 632	- 7 13 24.69	- 2 5 8.91
Cambridge (<i>England</i>)	+ 52 12 51.6	- 11 18.9	9.999 082	- 5 8 38.53	- 0 0 22.75
Cambridge (<i>Mass.</i>)	+ 42 22 47.6	- 11 37.3	9.999 334	- 0 23 44.73	+ 4 44 31.05
Cape of Good Hope	- 33 56 3.6	+ 10 48.0	9.999 543	- 6 22 10.54	- 1 13 54.76
Catania	+ 37 30 13.3	- 11 16.0	9.999 457	- 6 8 36	- 1 0 20
Chapultepec	+ 19 25 17.5	- 7 18.2	9.999 838	+ 1 28 22.52	+ 6 36 38.30
Charkow	+ 50 0 9.6	- 11 30.2	9.999 138	- 7 33 11.55	- 2 24 55.77

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log μ .	Longitude.	
				From Washington.	From Greenwich.
	° ' "	"		h m s	h m s
Charlottesville	+ 38 2 1.2	- 11 19.3	9.999 444	+ 0 5 49.44	+ 5 14 5.22
Chicago (<i>Old Obs.</i>)	+ 41 50 1.0	- 11 35.9	9.999 348	+ 0 42 11.06	+ 5 50 26.84
Christiania	+ 59 54 44.0	- 10 8.7	9.998 899	- 5 51 9.30	- 0 42 53.52
Cincinnati (<i>New Obs.</i>)	+ 39 8 19.5	- 11 25.4	9.999 416	+ 0 29 25.62	+ 5 37 41.40
Cincinnati (<i>Old Obs.</i>)	+ 39 6 26.5	- 11 25.2	9.999 417	+ 0 29 43.22	+ 5 37 59.00
Clinton	+ 43 3 17.0	- 11 38.7	9.999 316	- 0 6 38.33	+ 5 1 37.45
Coimbra	+ 40 12 24.5	- 11 30.3	9.999 389	- 4 34 32.7	+ 0 33 43.1
Columbia (<i>Missouri</i>)	+ 38 56 51.7	- 11 24.4	9.999 421	+ 1 1 2.55	+ 6 9 18.33
Copenhagen	+ 55 41 12.9	- 10 53.1	9.998 997	- 5 58 34.48	- 0 50 18.70
Cordoba	- 31 25 15.2	+ 10 22.2	9.999 602	- 0 51 27.56	+ 4 16 48.22
Cracow	+ 50 3 52.0	- 11 29.9	9.999 137	- 6 28 6.06	- 1 19 50.28
Crowborough	+ 51 3 14	- 11 25.4	9.999 112	- 5 8 54	- 0 0 38
Dantzic	+ 54 21 18.0	- 11 4.1	9.999 029	- 6 22 55.4	- 1 14 39.6
Denver	+ 39 40 36.4	- 11 27.9	9.999 402	+ 1 51 31.85	+ 6 59 47.63
Dorpat	+ 58 22 47.1	- 10 26.4	9.998 934	- 6 55 9.07	- 1 46 53.29
Dresden	+ 51 2 16.8	- 11 25.4	9.999 112	- 6 3 10.63	- 0 54 54.85
Dublin	+ 53 23 13.1	- 11 11.3	9.999 053	- 4 42 54.7	+ 0 25 21.1
Dun Echt	+ 57 9 36	- 10 39.2	9.998 962	- 4 58 35.8	+ 0 9 40.0
Durham	+ 54 46 6.2	- 11 0.9	9.999 019	- 5 1 56.03	+ 0 6 19.75
Düsseldorf	+ 51 12 25.0	- 11 24.6	9.999 108	- 5 35 20.8	- 0 27 5.0
Edinburgh (<i>Calton Hill</i>)	+ 55 57 23.2	- 10 50.7	9.998 991	- 4 55 32.7	+ 0 12 43.1
Edinburgh (<i>Royal Obs.</i>)	+ 55 55 28.0	- 10 50.9	9.998 991	- 4 55 31.6	+ 0 12 44.2
Evanston (<i>Dearborn</i>)	+ 42 3 33.4	- 11 36.5	9.999 342	+ 0 42 26.5	+ 5 50 42.3
Flagstaff (<i>Lowell</i>)	+ 35 12 30.4	- 10 59.2	9.999 513	+ 2 18 28.79	+ 7 26 44.57
Florence (<i>Reale Museo</i>)	+ 43 46 4.1	- 11 39.7	9.999 298	- 5 53 17.3	- 0 45 1.5
Florence (<i>Arcturi</i>)	+ 43 45 14.6	- 11 39.7	9.999 298	- 5 53 17.12	- 0 45 1.34
Geneva	+ 46 11 58.8	- 11 39.9	9.999 236	- 5 32 52.49	- 0 24 36.71
Genoa	+ 44 25 9.3	- 11 40.2	9.999 281	- 5 43 57.11	- 0 35 41.33
Georgetown	+ 38 54 26.7	- 11 24.2	9.999 422	+ 0 0 2.48	+ 5 8 18.26
Glasgow (<i>Missouri</i>)	+ 39 13 45.6	- 11 25.8	9.999 414	+ 1 3 2.30	+ 6 11 18.08
Glasgow (<i>Scotland</i>)	+ 55 52 42.8	- 10 51.5	9.998 993	- 4 51 5.23	+ 0 17 10.55
Gohlis	+ 51 21 35.0	- 11 23.7	9.999 104	- 5 57 45.43	- 0 49 29.65
Gotha (<i>Old Obs.</i>)	+ 50 56 5.2	- 11 26.0	9.999 114	- 5 51 10.88	- 0 42 55.10
Gotha	+ 50 56 37.9	- 11 25.9	9.999 114	- 5 51 6.27	- 0 42 50.49
Göttingen	+ 51 31 47.9	- 11 22.8	9.999 100	- 5 48 2.07	- 0 39 46.29
Graz	+ 47 4 37.2	- 11 38.8	9.999 213	- 6 10 4	- 1 1 48
Greenwich	+ 51 28 38.1	- 11 23.1	9.999 101	- 5 8 15.78	- 0 0 0.00
Grignon	+ 47 33 42	- 11 37.8	9.999 201	- 5 25 54	- 0 17 38
Hamburg	+ 53 33 7.0	- 11 10.1	9.999 049	- 5 48 9.6	- 0 39 53.8
Hanover	+ 43 42 15.3	- 11 39.6	9.999 300	- 0 19 7.87	+ 4 49 7.91
Harrow	+ 51 34 47.1	- 11 22.6	9.999 098	- 5 6 55.92	+ 0 1 19.86
Hastings-on-Hudson	+ 40 59 25	- 11 33.2	9.999 369	- 0 12 46.33	+ 4 55 29.45
Haverford	+ 40 0 40.1	- 11 29.4	9.999 394	- 0 7 3.08	+ 5 1 12.70
Heidelberg	+ 49 24 35	- 11 34.5	9.999 153	- 5 43 4.3	- 0 34 48.5
Helsingfors	+ 60 9 42.6	- 10 5.6	9.998 893	- 6 48 4.93	- 1 39 49.15

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ .	Longitude.	
				From Washington.	From Greenwich.
	° ' "	"		h m s	h m s
Hereny	+47 15 47.4	- 11 38.4	9.999 208	- 6 14 40.5	- 1 6 24.7
Hongkong	+22 18 13.4	- 8 10.7	9.999 789	+11 15 2.36	- 7 36 41.86
Hudson	+41 14 42.6	- 11 34.1	9.999 363	+ 0 17 25.5	+ 5 25 41.3
Jamaica	+18 24 51	- 6 58.7	9.999 854	+ 0 3 13.70	+ 5 11 29.48
Jena (<i>University</i>)	+50 55 34.9	- 11 26.0	9.999 115	- 5 54 36.05	- 0 46 20.27
Kalocsa	+46 31 41.7	- 11 39.6	9.999 227	- 6 24 10.12	- 1 15 54.34
Karlsruhe	+49 0 29.6	- 11 33.9	9.999 163	- 5 41 52.2	- 0 33 36.4
Kasan	+55 47 24.3	- 10 52.2	9.998 995	- 8 24 44.82	- 3 16 29.04
Kew	+51 28 6	- 11 23.2	9.999 101	- 5 7 0.7	+ 0 1 15.1
Kiel	+54 20 28.5	- 11 4.2	9.999 030	- 5 48 51.42	- 0 40 35.64
Kiew	+50 27 10.5	- 11 28.2	9.999 127	- 7 10 16.42	- 2 2 0.64
Kis Kartal	+47 41 54.8	- 11 37.5	9.999 197	- 6 26 27.5	- 1 18 11.7
Königsberg	+54 42 50.4	- 11 1.3	9.999 021	- 6 30 14.82	- 1 21 59.04
Kremsmünster	+48 3 23.1	- 11 36.7	9.999 188	- 6 4 47.37	- 0 56 31.59
La Plata	-34 54 30.3	+ 10 56.7	9.999 520	- 1 16 38.8	+ 3 51 37.0
Leiden	+52 9 20.0	- 11 19.3	9.999 084	- 5 26 11.95	- 0 17 56.17
Leipzig	+51 20 5.9	- 11 23.9	9.999 104	- 5 57 49.76	- 0 49 33.98
Liege (<i>Cointe, Ougrée</i>)	+50 37 7	- 11 27.5	9.999 123	- 5 30 31.0	- 0 22 15.2
Lisbon (<i>Marine Obs.</i>)	+38 42 17.6	- 11 23.3	9.999 427	- 4 31 42.20	+ 0 36 33.58
Lisbon (<i>Royal Obs.</i>)	+38 42 31.3	- 11 23.1	9.999 427	- 4 31 31.10	+ 0 36 44.68
Liverpool	+53 24 4.8	- 11 11.2	9.999 053	- 4 55 58.45	+ 0 12 17.33
Lübec	+53 51 31.1	- 11 7.9	9.999 042	- 5 51 1.5	- 0 42 45.7
Lund	+55 41 51.6	- 10 53.0	9.998 997	- 6 1 0.79	- 0 52 45.01
Lussinpiccolo (<i>Manora</i>)	+44 32 11.0	- 11 40.3	9.999 278	- 6 6 8.19	- 0 57 52.41
Lyons	+45 41 41.0	- 11 40.3	9.999 248	- 5 27 24.33	- 0 19 8.55
Madison	+43 4 36.8	- 11 38.7	9.999 316	+ 0 49 22.15	+ 5 57 37.93
Madras	+13 4 8.0	- 5 7.6	9.999 925	-10 29 14.90	- 5 20 59.12
Madrid	+40 24 29.7	- 11 31.1	9.999 384	- 4 53 30.66	+ 0 14 45.12
Manila	+14 35 25	- 5 40.5	9.999 907	+10 47 54	- 8 3 50
Mannheim	+49 29 11.0	- 11 32.2	9.999 151	- 5 42 6.23	- 0 33 50.45
Marburg	+50 48 46.9	- 11 26.5	9.999 118	- 5 43 20.7	- 0 35 4.9
Markree	+54 10 31.8	- 11 5.5	9.999 034	- 4 34 27.4	+ 0 33 48.4
Marseilles	+43 18 17.5	- 11 39.1	9.999 310	- 5 29 50.37	- 0 21 34.59
Mauritius	-20 5 39	+ 7 30.8	9.999 828	- 8 58 28.4	- 3 50 12.6
Melbourne	-37 49 53.4	+ 11 18.1	9.999 449	+ 9 11 50.2	- 9 39 54.0
Meudon	+48 48 18	- 11 34.6	9.999 169	- 5 17 11.4	- 0 8 55.6
Mexico	+19 26 1.3	- 7 18.4	9.999 838	+ 1 28 10.95	+ 6 36 26.73
Middletown (<i>Conn.</i>)	+41 33 16.0	- 11 35.1	9.999 355	- 0 17 38.60	+ 4 50 37.18
Milan	+45 27 59.3	- 11 40.4	9.999 254	- 5 45 1.70	- 0 36 45.92
Modena	+44 38 52.8	- 11 40.4	9.999 275	- 5 51 58.7	- 0 43 42.9
Moncalieri	+44 59 51	- 11 40.4	9.999 266	- 5 39 5	- 0 30 49
Montreal	+45 30 17.0	- 11 40.4	9.999 253	- 0 13 57.15	+ 4 54 18.63
Montsouris	+48 49 18.0	- 11 34.5	9.999 168	- 5 17 36.46	+ 0 9 20.68
Moscow	+55 45 19.8	- 10 52.5	9.998 995	- 7 38 32.87	- 2 30 17.09
Mount Hamilton (<i>Lick</i>)	+37 20 25.6	- 11 14.9	9.999 461	+ 2 58 19.11	+ 8 6 34.89
Munich	+48 8 45.5	- 11 36.5	9.999 186	5 54 41.85	- 0 46 26.07

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log μ .	Longitude.	
				From Washington.	From Greenwich.
				h m s	h m s
Naples	+40 51 46.3	- 11 32.8	9.999 372	6 5 17.51	- 0 57 1.73
Nashville	+36 8 54.4	- 11 6.6	9.999 490	+ 0 38 56.4	+ 5 47 12.2
Natal	-29 50 46.6	+ 10 3.7	9.999 637	- 7 12 16.96	- 2 4 1.18
Neuchatel	+47 0 1.2	- 11 38.9	9.999 215	- 5 36 5.71	- 0 27 49.93
New Haven (<i>Old Obs.</i>)	+41 18 36.5	- 11 34.3	9.999 361	- 0 16 33.64	+ 4 51 42.14
New Haven (<i>Yale Univ.</i>)	+41 19 22.3	- 11 34.4	9.999 361	- 0 16 35.20	+ 4 51 40.58
New York (<i>Columb. Coll.</i>)	+40 45 23.1	- 11 32.4	9.999 375	- 0 12 22.14	+ 4 55 53.64
New York (<i>RUTHERFURD</i>)	+40 43 48.5	- 11 32.3	9.999 376	- 0 12 19.10	+ 4 55 56.68
Nice	+43 43 16.9	- 11 39.6	9.999 299	- 5 37 27.96	- 0 29 12.18
Nicolaëff	+46 58 21.8	- 11 38.9	9.999 216	7 16 9.58	- 2 7 53.80
Northfield	+44 27 41.6	- 11 40.3	9.999 280	+ 1 4 20.03	+ 6 12 35.81
Oakland (<i>Cal.</i>)	+37 48 5	- 11 17.9	9.999 449	+ 3 0 50.77	+ 8 9 6.55
Odessa	+46 28 36.7	- 11 39.6	9.999 228	- 7 11 17.88	- 2 3 2.10
Ogden	+41 13 8.6	- 11 34.0	9.999 363	+ 2 19 43.85	+ 7 27 59.63
O-Gyalla	+47 52 27.3	- 11 37.1	9.999 192	- 6 21 1.32	- 1 12 45.54
Olmütz	+49 35 43	- 11 31.8	9.999 149	- 6 17 24	- 1 9 8
Oxford (<i>Mississippi</i>)	+34 22 12.6	- 10 52.0	9.999 533	+ 0 49 51.3	+ 5 58 7.1
Oxford (<i>Radcliffe</i>)	+51 45 35.4	- 11 21.6	9.999 094	- 5 3 13.2	+ 0 5 2.6
Oxford (<i>University</i>)	+51 45 34.2	- 11 21.6	9.999 094	- 5 3 15.4	+ 0 5 0.4
Padua	+45 24 5	- 11 40.4	9.999 256	- 5 55 44.97	- 0 47 29.19
Palermo	+38 6 44.0	- 11 19.7	9.999 442	- 6 1 41.68	- 0 53 25.90
Paramatta	-33 48 49.8	+ 10 46.9	9.999 546	+ 8 47 44.0	- 10 4 0.2
Paris	+48 50 11.2	- 11 34.5	9.999 168	- 5 17 36.75	- 0 9 20.97
Philadelphia	+39 57 7.5	- 11 29.2	9.999 396	- 0 7 37.27	+ 5 0 38.51
Philadelphia (<i>Flower</i>)	+39 58 2.1	- 11 29.2	9.999 395	- 0 7 9.2	+ 5 1 6.6
Plonsk	+52 37 40.0	- 11 16.4	9.999 072	- 6 29 47.8	- 1 21 32.0
Pola	+44 51 48.7	- 11 40.4	9.999 270	- 6 3 38.67	- 0 55 22.89
Portsmouth	+50 48 3	- 11 26.6	9.999 118	- 5 3 51.0	+ 0 4 24.8
Potsdam	+52 22 56.0	- 11 17.9	9.999 078	- 6 0 31.7	- 0 52 15.9
Poughkeepsie	+41 41 18	- 11 35.5	9.999 351	- 0 12 42.13	+ 4 55 33.65
Prague (<i>University</i>)	+50 5 15.8	- 11 29.8	9.999 136	- 6 5 56.1	- 0 57 40.3
Princeton	+40 20 57.8	- 11 30.8	9.999 385	- 0 9 38.17	+ 4 58 37.61
Princeton (<i>Halsted</i>)	+40 20 55.8	- 11 30.9	9.999 386	- 0 9 36.34	+ 4 58 39.44
Providence (<i>SEAGRAVE</i>)	+41 49 46.4	- 11 35.9	9.999 348	- 0 22 38.14	+ 4 45 37.64
Providence (<i>Ladd</i>)	+41 50 21	- 11 35.9	9.999 348	- 0 22 39.83	+ 4 45 35.95
Pulkowa	+59 46 18.7	- 10 10.4	9.998 902	- 7 9 34.42	- 2 1 18.64
Quebec	+46 47 59.2	- 11 39.2	9.999 220	- 0 23 23.14	+ 4 44 52.64
Quito	- 0 14 0	+ 0 5.7	0.000 000	+ 0 5 50.88	+ 5 14 6.66
Riga	+56 57 9.3	- 10 41.3	9.998 967	- 6 44 43.95	- 1 36 28.17
Rio de Janeiro	-22 54 23.6	+ 8 21.1	9.999 779	- 2 15 34.4	+ 2 52 41.4
Rochester	+43 9 16.8	- 11 38.8	9.999 314	+ 0 2 6.00	+ 5 10 21.78
Rome (<i>Coll. Rom.</i>)	+41 53 53.6	- 11 36.1	9.999 346	- 5 58 11.33	- 0 49 55.55
Rome (<i>Capitol</i>)	+41 53 33.5	- 11 36.0	9.999 346	- 5 58 12.15	- 0 49 56.37
Rome (<i>Vatican</i>)	+41 54 4.8	- 11 36.1	9.999 346	- 5 58 5.25	- 0 49 49.47
Rousdon	+50 42 38	- 11 27.0	9.999 120	- 4 56 16.84	+ 0 11 58.94
Rugby	+52 22 7	- 11 18.0	9.999 079	- 5 3 13.8	+ 0 5 2.0

POSITIONS OF OBSERVATORIES.

(North Latitudes and West Longitudes are Considered Positive.)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ .	Longitude.	
				From Washington.	From Greenwich.
				h m s	h m s
San Fernando . . .	+ 36 27 42.0	- 11 8.9	9.999 483	- 4 43 26.6	+ 0 24 49.2
San Francisco . . .	+ 37 47 27.9	- 11 17.8	9.999 450	+ 3 1 27.08	+ 8 9 42.86
Santiago de Chile . . .	- 33 26 42.0	+ 10 43.4	9.999 555	- 0 25 29.56	+ 4 42 46.22
South Hadley . . .	+ 42 15 18.2	- 11 37.0	9.999 337	- 0 17 55.49	+ 4 50 20.29
Speier . . .	+ 49 18 55.2	- 11 32.9	9.999 156	- 5 42 1.34	- 0 33 45.56
St. Louis . . .	+ 38 38 3.0	- 11 22.7	9.999 429	+ 0 52 33.48	+ 6 0 49.26
St. Petersburg (<i>Academy</i>) . . .	+ 59 56 29.7	- 10 8.4	9.998 898	- 7 9 29.24	- 2 1 13.46
St. Petersburg (<i>Univ.</i>) . . .	+ 59 56 32.0	- 10 8.4	9.998 898	- 7 9 27.2	- 2 1 11.4
Stockholm . . .	+ 59 20 33.0	- 10 15.5	9.998 912	- 6 20 29.77	- 1 12 13.99
Stonyhurst . . .	+ 53 50 40	- 11 8.0	9.999 042	- 4 58 23.10	+ 0 9 52.68
Strassburg (<i>New Obs.</i>) . . .	+ 48 35 0.3	- 11 35.3	9.999 174	- 5 39 20.47	- 0 31 4.69
Strassburg (<i>Old Obs.</i>) . . .	+ 48 34 53.8	- 11 35.3	9.999 174	- 5 39 18.27	- 0 31 2.49
Sydney . . .	- 33 51 41.1	+ 10 47.3	9.999 545	+ 8 46 54.68	- 10 4 49.54
Syracuse . . .	+ 43 2 13.1	- 11 38.6	9.999 317	- 0 3 42.42	+ 5 4 33.36
Tacubaya . . .	+ 19 24 17.5	- 7 17.8	9.999 839	+ 1 28 30.75	+ 6 36 46.53
Taschkent . . .	+ 41 19 31.3	- 11 34.4	9.999 361	- 9 45 26.58	- 4 37 10.80
Tokio . . .	+ 35 39 17.5	- 11 2.8	9.999 502	+ 9 32 46.20	- 9 18 58.02
Toronto . . .	+ 43 39 35.9	- 11 39.6	9.999 301	+ 0 9 18.87	+ 5 17 34.65
Toulouse . . .	+ 43 36 45	- 11 39.5	9.999 302	- 5 14 5.66	- 0 5 49.88
Trieste . . .	+ 45 38 45.4	- 11 40.3	9.999 250	- 6 3 18.73	- 0 55 2.95
Troy (<i>N. Y.</i>) . . .	+ 42 43 52.9	- 11 38.1	9.999 325	- 0 13 33.49	+ 4 54 42.29
Tulse Hill . . .	+ 51 26 47.0	- 11 23.3	9.999 102	- 5 7 48.1	+ 0 0 27.7
Turin . . .	+ 45 4 8.0	- 11 40.4	9.999 265	- 5 39 2.96	- 0 30 47.18
Tuscaloosa (<i>Ala. Univ.</i>) . . .	+ 33 12 36.8	- 10 41.1	9.999 561	+ 0 41 55.96	+ 5 50 11.74
Twickenham . . .	+ 51 27 4.2	- 11 23.3	9.999 102	- 5 7 2.7	+ 0 1 13.1
Upsala (<i>New Obs.</i>) . . .	+ 59 51 29.4	- 10 9.3	9.998 900	- 6 18 45.93	- 1 10 30.15
Utrecht . . .	+ 52 5 9.6	- 11 19.7	9.999 086	- 5 28 46.8	- 0 20 31.0
Venice . . .	+ 45 26 10.5	- 11 40.4	9.999 255	- 5 57 37.90	- 0 49 22.12
Vienna (<i>Josephstadt</i>) . . .	+ 48 12 53.8	- 11 36.2	9.999 183	- 6 13 41.1	- 1 5 25.3
Vienna (<i>New Obs.</i>) . . .	+ 48 13 55.4	- 11 36.2	9.999 183	- 6 13 37.17	- 1 5 21.39
Vienna (<i>Old Obs.</i>) . . .	+ 48 12 35.5	- 11 36.3	9.999 184	- 6 13 47.42	- 1 5 31.64
Vienna (<i>Ottakring</i>) . . .	+ 48 12 46.7	- 11 36.2	9.999 183	- 6 13 26.89	- 1 5 11.11
Warsaw . . .	+ 52 13 4.7	- 11 18.9	9.999 082	- 6 32 23.06	- 1 24 7.28
Washington . . .	+ 38 55 14.0	- 11 24.2	9.999 422	0 0 0.00	+ 5 8 15.78
Washington (<i>Old Obs.</i>) . . .	+ 38 53 38.8	- 11 24.1	9.999 422	- 0 0 3.63	+ 5 8 12.15
Washington (<i>Smithsonian</i>) . . .	+ 38 53 17.3	- 11 24.1	9.999 422	- 0 0 9.6	+ 5 8 6.2
Washington (<i>Cath. Univ.</i>) . . .	+ 38 56 14.8	- 11 24.2	9.999 422	- 0 0 15.78	+ 5 8 0.00
Wellington . . .	- 41 18 0.6	+ 11 34.3	9.999 361	+ 7 12 37.70	- 11 39 6.52
West Point (<i>Old Obs.</i>) . . .	+ 41 23 31	- 11 34.6	9.999 359	- 0 12 26.34	+ 4 55 49.44
West Point (<i>New Obs.</i>) . . .	+ 41 23 22.1	- 11 34.6	9.999 359	- 0 12 25.23	+ 4 55 50.55
Wilhelmshaven . . .	+ 53 31 52.2	- 11 10.3	9.999 050	- 5 40 50.89	- 0 32 35.11
Williamstown (<i>Mass.</i>) . . .	+ 42 42 30	- 11 38.0	9.999 325	- 0 15 26	+ 4 52 50
Williamstown (<i>Victoria</i>) . . .	- 37 52 7.2	+ 11 18.3	9.999 448	+ 9 12 6.1	- 9 39 38.1
Wilna . . .	+ 54 40 59.1	- 11 1.6	9.999 021	- 6 49 24.60	- 1 41 8.82
Windsor . . .	- 33 36 30.8	+ 10 44.9	9.999 551	+ 8 48 23.7	- 10 3 20.5
Williams Bay (<i>Yerkes</i>) . . .	+ 42 34 12.6	- 11 37.7	9.999 329	+ 0 45 57.46	+ 5 54 13.24
Zürich . . .	+ 47 22 40.0	- 11 38.2	9.999 205	- 5 42 28.08	- 0 34 12.30

PART IV.

APPARENT PLACES OF STARS, STAR-NUMBERS,
AND OTHER DATA,

BASED ON THE CONSTANTS OF THE
PARIS CONFERENCE OF 1896.

FORMULÆ FOR THE REDUCTION OF THE POSITIONS OF THE FIXED STARS, USING THE NOTATION OF BESSEL, AND THE CONSTANTS OF THE PARIS CONFERENCE OF MAY, 1896.

NOTATION.

- τ , the time reckoned in units of one year, from the beginning of the Besselian fictitious year, (1908, January 1^d.037, Washington mean time),
 a_0, δ_0 , the star's mean right ascension and declination at the beginning of the fictitious year,
 a, δ , the star's apparent right ascension and declination at the time τ ,
 μ, μ' , the annual proper motion in right ascension and declination,
 $\odot$, the Sun's true longitude,
 L , the Sun's mean longitude,
 Ω , the longitude of the Moon's ascending node, | ω , the obliquity of the ecliptic,
 Γ' , the longitude of the Moon's perigee,
 ζ , the Moon's mean longitude.

BESSELIAN STAR-NUMBERS.

$$\begin{aligned} A = & \tau - 0.342\,17 \sin \Omega & + 0.000\,24 \sin (\zeta + \Gamma') \\ & + 0.004\,15 \sin 2\, \Omega & + 0.001\,33 \sin (\zeta - \Gamma') \\ & - 0.024\,95 \sin 2\, L & - 0.000\,68 \sin (2\, \zeta - \Omega) \\ & + 0.002\,18 \sin (L + 75^\circ.3) & - 0.000\,52 \sin (3\, \zeta - \Gamma') \\ & - 0.000\,97 \sin (3\, L + 78^\circ.7) & + 0.000\,30 \sin (\zeta - 2\, L + \Gamma') \\ & + 0.000\,24 \sin (2\, L - \Omega) & + 0.000\,12 \sin 2\, (\zeta - L) \\ & - 0.004\,05 \sin 2\, \zeta & \\ B = & - 9.210 \cos \Omega & + 0.007 \cos (2\, L - \Omega) \\ & + 0.090 \cos 2\, \Omega & - 0.088 \cos 2\, \zeta \\ & - 0.546 \cos 2\, L & - 0.018 \cos (2\, \zeta - \Omega) \\ & - 0.021 \cos (3\, L + 78^\circ.7) & - 0.011 \cos (3\, \zeta - \Gamma') \\ & + 0.009 \cos (L - 78^\circ.7) & + 0.005 \cos (\zeta + \Gamma') \\ C = & - 20.4700 \cos \omega \cos \odot \\ D = & - 20.4700 \sin \odot \\ E = & - 0.0422 \sin \Omega + 0''.0005 \sin 2\, \Omega - 0''.0031 \sin 2\, L \end{aligned}$$

BESSEL'S Star-Constants.

$$\begin{aligned} a &= 3^s.072\,48 + 1^s.336\,41 \sin a_0 \tan \delta_0 = \text{precession in right ascension} \\ b &= \frac{1}{18} \cos a_0 \tan \delta_0 \\ c &= \frac{1}{18} \cos a_0 \sec \delta_0 \\ d &= \frac{1}{18} \sin a_0 \sec \delta_0 \\ a' &= 20''.0461 \cos a_0 = \text{precession in declination} \\ b' &= -\sin a_0 \\ c' &= \tan \omega \cos \delta_0 - \sin a_0 \sin \delta_0 \\ d' &= \cos a_0 \sin \delta_0 \end{aligned}$$

Reduction to Apparent Position.

$$\begin{aligned} a &= a_0 + \tau \mu + Aa + Bb + Cc + Dd + \frac{1}{18} E & (\text{in time}) \\ \delta &= \delta_0 + \tau \mu' + Aa' + Bb' + Cc' + Dd' & (\text{in arc}) \end{aligned}$$

INDEPENDENT STAR-NUMBERS.

$$\begin{aligned} f &= f' + f'' = + 46''.0872 A + E \text{ (in arc)} = 3^s.072\,48 A + \frac{1}{18} E & (\text{in time}) \\ f' &= - 0^s.0124 \sin 2\, \zeta + 0^s.0041 \sin (\zeta - \Gamma') + 0^s.0007 \sin (\zeta + \Gamma') \\ & - 0^s.0021 \sin (2\, \zeta - \Omega) - 0^s.0016 \sin (3\, \zeta - \Gamma') \\ & + 0^s.0009 \sin (\zeta - 2\, L + \Gamma') + 0^s.0004 \sin 2\, (\zeta - L) \\ g \sin G &= B & h \sin H &= C \\ g \cos G &= 20''.0461 A & h \cos H &= D & i &= C \tan \omega \end{aligned}$$

Reduction to Apparent Position.

$$\begin{aligned} a &= a_0 + f + \tau \mu + \frac{1}{18} g \sin (G + a_0) \tan \delta_0 + \frac{1}{18} h \sin (H + a_0) \sec \delta_0 & (\text{in time}) \\ \delta &= \delta_0 + \tau \mu' + g \cos (G + a_0) + h \cos (H + a_0) \sin \delta_0 + i \cos \delta_0 & (\text{in arc}) \end{aligned}$$

NOTES.—(1) The independent star-numbers are more convenient, when only one or two apparent positions of a star are required, or when BESSEL'S star-constants are not known with sufficient accuracy. Otherwise, the Besselian star-numbers are more convenient.

(2) In using the star-constants of the *British Association Catalogue*, $a, b, c, d, a', b', c', d'$, with the star-numbers of this Ephemeris, the quantities to be formed are $Ac, Bd, Ca, Dh, -Ac', -Bd', -Ca', -Dh'$.

(CONSTANTS OF PARIS CONFERENCE.)

FOR GREENWICH MEAN NOON.

Date.	Precession in Longitude from 1908.0.	Nutation.			Obliquity of Ecliptic. (Newcomb.)	The Sun's Aberration.
		In Longitude.	In R. A.	In Obliquity.		
Jan. 1	— 0.04	— 16.36	— 1.001	— 2.76	23 27 1.75	— 20.81
11	+ 1.34	15.99	0.978	2.57	1.93	20.81
21	2.71	15.71	0.961	2.35	2.14	20.79
31	4.09	15.56	0.952	2.08	2.39	20.77
Feb. 10	5.47	15.58	0.953	1.80	2.66	20.74
20	+ 6.84	— 15.75	— 0.964	— 1.53	23 27 2.92	— 20.69
Mar. 1	8.22	16.07	0.983	1.29	3.14	20.64
11	9.59	16.47	1.007	1.12	3.30	20.59
21	10.97	16.91	1.034	1.00	3.40	20.53
31	12.34	17.36	1.062	0.96	3.44	20.48
Apr. 10	+ 13.72	— 17.76	— 1.086	— 0.96	23 27 3.42	— 20.42
20	15.10	18.05	1.104	1.02	3.35	20.36
30	16.47	18.22	1.114	1.11	3.25	20.31
May 10	17.85	18.26	1.117	1.20	3.14	20.26
20	19.22	18.16	1.111	1.29	3.04	20.22
30	+ 20.60	— 17.94	— 1.097	— 1.36	23 27 2.97	— 20.18
June 9	21.97	17.64	1.078	1.36	2.94	20.15
19	23.35	17.27	1.056	1.32	2.97	20.14
29	24.73	16.89	1.033	1.22	3.06	20.13
July 9	26.10	16.55	1.012	1.06	3.20	20.13
19	+ 27.48	— 16.28	— 0.996	— 0.85	23 27 3.39	— 20.14
29	28.85	16.11	0.986	0.60	3.62	20.16
Aug. 8	30.23	16.08	0.984	0.34	3.88	20.18
18	31.61	16.17	0.989	— 0.08	4.13	20.22
28	32.98	16.39	1.002	+ 0.16	4.36	20.26
Sept. 7	+ 34.36	— 16.72	— 1.023	+ 0.36	23 27 4.55	— 20.31
17	35.73	17.12	1.047	0.51	4.69	20.37
27	37.11	17.54	1.073	0.60	4.76	20.42
Oct. 7	38.48	17.95	1.098	0.62	4.78	20.48
17	39.86	18.28	1.118	0.60	4.74	20.54
27	+ 41.24	— 18.51	— 1.132	+ 0.53	23 27 4.65	— 20.60
Nov. 6	42.61	18.59	1.137	0.43	4.54	20.65
16	43.99	18.51	1.132	0.32	4.42	20.70
26	45.36	18.27	1.117	0.23	4.32	20.74
Dec. 6	46.74	17.90	1.095	0.18	4.26	20.77
16	+ 48.11	— 17.45	— 1.067	+ 0.19	23 27 4.26	— 20.80
26	49.49	16.97	1.038	0.28	4.33	20.81
36	+ 50.87	— 16.53	— 1.011	+ 0.46	23 27 4.46	— 20.81

Mean Obliquity 1908.0 23° 27' 4".51 (Newcomb).

Precession for 1908 50.2582 log = 1.70120

Precession in a Solar Day 0.1377 log = 9.13893

Precession in a Sidereal Day 0.1373 log = 9.13773

BESSELIAN STAR-NUMBERS, 1908.

(CONSTANTS OF PARIS CONFERENCE.)

FOR WASHINGTON MEAN MIDNIGHT.									
Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
Jan. 0	-9.52025	+0.4459	-0.48682	+1.30525	Feb. 15	-9.26259	+0.2169	-1.19302	+1.05699
1	9.51328	0.4489	0.53110	1.30389	16	9.25741	0.2007	1.19805	1.04537
2	9.50542	0.4488	0.57115	1.30240	17	9.25380	0.1841	1.20289	1.03329
3	9.49722	0.4452	0.60769	1.30076	18	9.25161	0.1688	1.20754	1.02073
4	9.48945	0.4382	0.64127	1.29898	19	9.25052	0.1568	1.21201	1.00767
h					(10.0)				
5	-9.48283	+0.4288	-0.67230	+1.29706	20	-9.24983	+0.1497	-1.21630	+0.99407
(7.0)	6	9.47764	0.4184	0.70114	21	9.24864	0.1484	1.22041	0.97989
7	9.47388	0.4091	0.72804	1.29276	22	9.24593	0.1518	1.22435	0.96510
8	9.47114	0.4023	0.75325	1.29040	23	9.24095	0.1579	1.22812	0.94966
9	9.46872	0.3987	0.77693	1.28788	24	9.23330	0.1632	1.23172	0.93352
10	-9.46605	+0.3982	-0.79926	+1.28520	25	-9.22337	+0.1653	-1.23516	+0.91662
11	9.46250	0.4000	0.82036	1.28237	26	9.21184	0.1613	1.23843	0.89891
12	9.45797	0.4026	0.84035	1.27939	27	9.20008	0.1505	1.24155	0.88031
13	9.45235	0.4047	0.85933	1.27625	28	9.18957	0.1335	1.24451	0.86074
14	9.44584	0.4054	0.87737	1.27296	29	9.18141	0.1123	1.24732	0.84013
15	-9.43880	+0.4039	-0.89457	+1.26948	Mar. 1	-9.17615	+0.0901	-1.24998	+0.81835
16	9.43160	0.4000	0.91097	1.26585	2	9.17342	0.0711	1.25249	0.79530
17	9.42457	0.3938	0.92664	1.26205	3	9.17231	0.0584	1.25485	0.77083
18	9.41805	0.3854	0.94163	1.25808	4	9.17140	0.0536	1.25706	0.74477
19	9.41233	0.3753	0.95598	1.25393	h				
h					(11.0)				
20	-9.40761	+0.3642	-0.96974	+1.24961	6	-9.16590	+0.0626	-1.26106	+0.68703
(8.0)	21	9.40394	0.3532	0.98294	7	9.16002	0.0705	1.26284	0.65481
22	9.40125	0.3434	0.99562	1.24042	8	9.15220	0.0767	1.26449	0.61989
23	9.39922	0.3362	1.00781	1.23554	9	9.14289	0.0793	1.26599	0.58180
24	9.39728	0.3324	1.01953	1.23047	10	9.13284	0.0774	1.26736	0.53992
25	-9.39466	+0.3322	-1.03080	+1.22520	11	-9.12277	+0.0705	-1.26859	+0.49345
26	9.39067	0.3346	1.04166	1.21973	12	9.11338	0.0591	1.26969	0.44129
27	9.38491	0.3380	1.05211	1.21405	13	9.10532	0.0437	1.27065	0.38189
28	9.37722	0.3402	1.06218	1.20816	14	9.09906	0.0254	1.27148	0.31295
29	9.36799	0.3393	1.07189	1.20205	15	9.09482	0.0062	1.27217	0.23086
30	-9.35795	+0.3341	-1.08125	+1.19572	16	-9.09262	+0.9884	-1.27274	+0.12944
31	9.34825	0.3241	1.09028	1.18915	17	9.09212	9.9749	1.27317	9.99680
Feb. 1	9.33967	0.3104	1.09899	1.18235	18	9.09255	9.9686	1.27347	9.80481
2	9.33304	0.2946	1.10739	1.17531	19	9.09240	9.9709	1.27364	+9.45227
3	9.32848	0.2791	1.11550	1.16801	20	9.09065	9.9814	1.27368	-8.85270
h					h				
(9.0)	4	-9.32554	+0.2664	-1.12332	+1.16045	(12.0)			
5	9.32348	0.2579	1.13086	1.15262	21	-9.08583	+9.9966	-1.27359	-9.62901
6	9.32141	0.2542	1.13814	1.14451	22	9.07740	0.0121	1.27336	9.89190
7	9.31840	0.2543	1.14517	1.13612	23	9.06524	0.0238	1.27301	0.05434
8	9.31406	0.2563	1.15194	1.12742	24	9.05030	0.0283	1.27253	0.17214
9	-9.30818	+0.2585	-1.15848	+1.11841	25	9.03411	0.0237	1.27192	0.26456
10	9.30110	0.2591	1.16478	1.10908	26	-9.01883	+0.0103	-1.27118	-0.34059
11	9.29312	0.2570	1.17085	1.09940	27	9.00638	9.9905	1.27030	0.40512
12	9.28478	0.2517	1.17671	1.08937	28	8.99800	9.9682	1.26930	0.46115
13	9.27662	0.2430	1.18235	1.07898	29	8.99357	9.9488	1.26817	0.51064
14	-9.26910	+0.2313	-1.18779	+1.06819	30	8.99202	9.9370	1.26690	0.55492
15	-9.26259	+0.2169	-1.19302	+1.05699	31	-8.99123	+9.9360	-1.26550	-0.59496
					Apr. 1	-8.98927	+9.9449	-1.26397	-0.63148

E = - 0".04 = - 0".003

BESSELIAN STAR-NUMBERS, 1908.

529

(CONSTANTS OF PARIS CONFERENCE.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
Apr. 1	-8.98927	+9.9449	-1.26397	-0.63148	May 17	+8.10483	+0.1353	-1.01157	-1.23395
2	8.98466	9.9608	1.26230	0.66503	18	8.25648	0.1409	1.00020	1.23863
3	8.97649	9.9789	1.26050	0.69603	19	8.36847	0.1391	0.98840	1.24313
4	8.96473	9.9954	1.25857	0.72483	20	8.44886	0.1308	0.97615	1.24747
5	8.95007	0.0076	1.25650	0.75170	21	8.50433	0.1185	0.96342	1.25164
^h (13.0) 6	-8.93359	+0.0143	-1.25429	-0.77686	^h (16.0) 22	+8.54058	+0.1055	-0.95018	-1.25565
7	8.91645	0.0152	1.25195	0.80052	23	8.56312	0.0960	0.93641	1.25950
8	8.89978	0.0107	1.24946	0.82282	24	8.57921	0.0927	0.92206	1.26319
9	8.88461	0.0019	1.24683	0.84389	25	8.59428	0.0968	0.90710	1.26673
10	8.87185	9.9896	1.24407	0.86385	26	8.61331	0.1072	0.89148	1.27013
11	-8.86225	+9.9762	-1.24115	-0.88280	27	+8.63899	+0.1211	-0.87516	-1.27337
12	8.85600	9.9637	1.23809	0.90082	28	8.67117	0.1353	0.85808	1.27646
13	8.85254	9.9552	1.23489	0.91800	29	8.70723	0.1472	0.84018	1.27942
14	8.85079	9.9536	1.23153	0.93439	30	8.74468	0.1553	0.82139	1.28223
15	8.84899	9.9606	1.22802	0.95005	31	8.78039	0.1588	0.80163	1.28490
16	-8.84473	+9.9758	-1.22436	-0.96504	June 1	+8.81278	+0.1576	-0.78081	-1.28743
17	8.83550	9.9963	1.22055	0.97940	2	8.84080	0.1525	0.75881	1.28983
18	8.81954	0.0183	1.21657	0.99316	3	8.86433	0.1443	0.73553	1.29209
19	8.79623	0.0371	1.21243	1.00638	4	8.88338	0.1340	0.71080	1.29422
20	8.76589	0.0494	1.20813	1.01908	5	8.89834	0.1232	0.68446	1.29622
^h (14.0) 21	-8.73038	+0.0533	-1.20366	-1.03129	^h (17.0) 6	+8.90976	+0.1137	-0.65630	-1.29809
22	8.69355	0.0486	1.19901	1.04304	7	8.91861	0.1075	0.62606	1.29983
23	8.65982	0.0369	1.19420	1.05435	8	8.92639	0.1063	0.59346	1.30144
24	8.63306	0.0218	1.18920	1.06524	9	8.93485	0.1107	0.55806	1.30292
25	8.61511	0.0078	1.18402	1.07575	10	8.94591	0.1204	0.51941	1.30428
26	-8.60423	+9.9997	-1.17865	-1.08588	11	+8.96085	+0.1330	-0.47686	-1.30551
27	8.59726	0.0004	1.17309	1.09565	12	8.97987	0.1456	0.42956	1.30662
28	8.58827	0.0100	1.16734	1.10508	13	9.00234	0.1551	0.37626	1.30761
29	8.57264	0.0262	1.16139	1.11418	14	9.02641	0.1588	0.31558	1.30847
30	8.54704	0.0454	1.15523	1.12297	15	9.04976	0.1555	0.24476	1.30921
May 1	-8.50907	+0.0638	-1.14886	-1.13146	16	+9.07048	+0.1454	-0.15997	-1.30983
2	8.45803	0.0787	1.14225	1.13968	17	9.08743	0.1300	0.05436	1.31033
3	8.39340	0.0888	1.13545	1.14758	18	9.09996	0.1124	9.91438	1.31070
4	8.31513	0.0937	1.12841	1.15523	19	9.10867	0.0964	9.70635	1.31096
5	8.22324	0.0936	1.12112	1.16262	20	9.11474	0.0857	-9.29213	1.31109
^h (15.0) 6	-8.11893	+0.0894	-1.11360	-1.16977	^h (18.0) 21	+9.12001	+0.0822	+9.06721	-1.31111
7	8.00389	0.0822	1.10581	1.17667	22	9.12600	0.0858	9.63283	1.31100
8	7.88024	0.0733	1.09776	1.18334	23	9.13383	0.0945	9.87033	1.31078
9	7.75435	0.0646	1.08944	1.18979	24	9.14411	0.1048	0.02291	1.31043
10	7.63043	0.0584	1.08084	1.19601	25	9.15652	0.1137	0.13550	1.30997
11	-7.50650	+0.0568	-1.07193	-1.20202	26	+9.17026	+0.1189	+0.22473	-1.30938
12	7.34635	0.0614	1.06273	1.20783	27	9.18441	0.1192	0.29861	1.30867
13	-6.95424	0.0724	1.05320	1.21343	28	9.19813	0.1142	0.36162	1.30784
14	+7.02938	0.0884	1.04334	1.21884	29	9.21065	0.1044	0.41653	1.30689
15	7.59770	0.1065	1.03312	1.22406	30	9.22149	0.0905	0.46516	1.30581
16	+7.89818	+0.1232	-1.02254	-1.22910	July 1	+9.23053	+0.0735	+0.50878	-1.30461
17	+8.10483	+0.1353	-1.01157	-1.23395	2	+9.23782	+0.0550	+0.54826	-1.30329

$$E = -0''.04 = -0''.003$$

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
July 1	+9.23053	+0.0735	+0.50878	-1.30461	Aug. 16	+9.48157	+8.7110	+1.18093	-1.08166
2	9.23782	0.0550	0.54826	1.30329	17	9.48404	8.8075	1.18616	1.07149
3	9.24351	0.0370	0.58441	1.30184	18	9.48762	8.9025	1.19121	1.06095
4	9.24788	0.0216	0.61764	1.30027	19	9.49213	8.9557	1.19608	1.05002
5	9.25149	0.0115	0.64838	1.29857	20	9.49723	8.9465	1.20078	1.03867
h (19.0) 6	+9.25508	+0.0083	+0.67699	-1.29674	h (22.0) 21	+9.50248	+8.8519	+1.20531	-1.02688
7	9.25959	0.0119	0.70370	1.29479	22	9.50744	+8.5877	1.20967	1.01463
8	9.26583	0.0205	0.72876	1.29270	23	9.51176	-7.8129	1.21387	1.00190
9	9.27427	0.0308	0.75233	1.29049	24	9.51529	8.7818	1.21791	0.98865
10	9.28481	0.0386	0.77458	1.28814	25	9.51798	9.0722	1.22179	0.97484
11	+9.29682	+0.0403	+0.79562	-1.28566	26	+9.51984	-9.2420	+1.22552	-0.96045
12	9.30923	0.0331	0.81558	1.28304	27	9.52093	9.3518	1.22909	0.94543
13	9.32089	0.0162	0.83455	1.28029	28	9.52142	9.4208	1.23252	0.92974
14	9.33082	9.9906	0.85262	1.27740	29	9.52163	9.4576	1.23579	0.91332
15	9.33846	9.9593	0.86984	1.27436	30	9.52196	9.4661	1.23892	0.89612
16	+9.34382	+9.9268	+0.88630	-1.27119	31	+9.52293	-9.4506	+1.24190	-0.87808
17	9.34743	9.8995	0.90204	1.26787	Sept. 1	9.52499	9.4175	1.24475	0.85912
18	9.35007	9.8821	0.91712	1.26440	2	9.52830	9.3779	1.24745	0.83915
19	9.35276	9.8766	0.93158	1.26078	3	9.53274	9.3503	1.25001	0.81808
20	9.35637	9.8806	0.94546	1.25700	4	9.53796	9.3547	1.25244	0.79579
h (20.0) 21	+9.36137	+9.8897	+0.95880	-1.25308	h (23.0) 5	+9.54338	-9.3988	+1.25473	-0.77216
22	9.36778	9.8984	0.97162	1.24899	6	9.54833	9.4712	1.25688	0.74703
23	9.37528	9.9025	0.98397	1.24474	7	9.55229	9.5521	1.25890	0.72020
24	9.38329	9.8989	0.99585	1.24033	8	9.55493	9.6245	1.26079	0.69147
25	9.39127	9.8866	1.00731	1.23575	9	9.55637	9.6797	1.26254	0.66054
26	+9.39869	+9.8650	+1.01836	-1.23099	10	+9.55695	-9.7140	+1.26417	-0.62709
27	9.40519	9.8349	1.02901	1.22606	11	9.55719	9.7279	1.26566	0.59069
28	9.41061	9.7972	1.03930	1.22095	12	9.55772	9.7238	1.26703	0.55080
29	9.41492	9.7534	1.04923	1.21566	13	9.55900	9.7059	1.26827	0.50671
30	9.41814	9.7064	1.05882	1.21017	14	9.56122	9.6812	1.26938	0.45745
31	+9.42037	+9.6607	+1.06809	-1.20449	15	+9.56436	-9.6574	+1.27036	-0.40169
Aug. 1	9.42192	9.6227	1.07705	1.19862	16	9.56813	9.6425	1.27121	0.33755
2	9.42331	9.5990	1.08571	1.19254	17	9.57212	9.6419	1.27194	0.26204
3	9.42513	9.5934	1.09409	1.18624	18	9.57598	9.6565	1.27254	0.17035
4	9.42791	9.6033	1.10219	1.17973	19	9.57943	9.6828	1.27301	0.05374
h (21.0) 5	+9.43207	+9.6211	+1.11002	-1.17300	h (0.0) 20	+9.58228	-9.7158	+1.27336	-9.80355
6	9.43778	9.6362	1.11759	1.16603	21	9.58443	9.7503	1.27358	9.63654
7	9.44481	9.6393	1.12492	1.15883	22	9.58583	9.7825	1.27367	-8.91981
8	9.45251	9.6223	1.13201	1.15138	23	9.58654	9.8087	1.27364	+9.42650
9	9.46012	9.5791	1.13887	1.14367	24	9.58676	9.8269	1.27348	0.79046
10	+9.46676	+9.5047	+1.14550	-1.13570	25	+9.58672	-9.8351	+1.27319	+9.98569
11	9.47200	9.3939	1.15191	1.12746	26	9.58673	9.8323	1.27278	0.11983
12	9.47557	9.2435	1.15812	1.11892	27	9.58717	9.8184	1.27223	0.22213
13	9.47771	9.0554	1.16412	1.11009	28	9.58842	9.7953	1.27156	0.30480
14	9.47897	8.8517	1.16991	1.10094	29	9.59065	9.7672	1.27076	0.37415
15	+9.48002	+8.7127	+1.17552	-1.09147	30	+9.59399	-9.7407	+1.26982	+0.43385
16	+9.48157	+8.7110	+1.18093	-1.08166	Oct. 1	+9.59817	-9.7240	+1.26876	+0.48624

E - 0.04 - 0.003

[Eph 08]

BESSELIAN STAR-NUMBERS, 1908.

531

(CONSTANTS OF PARIS CONFERENCE.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
Oct. 1	+9.59817	-9.7240	+1.26876	+0.48624	Nov. 16	+9.71058	-9.5451	+1.03792	+1.22166
2	9.60269	9.7239	1.26756	0.53289	17	9.71200	9.5650	1.02700	1.22702
3	9.60702	9.7418	1.26624	0.57491	18	9.71311	9.5709	1.01566	1.23219
4	9.61066	9.7720	1.26477	0.61313	19	9.71413	9.5597	1.00387	1.23716
5	9.61324	9.8059	1.26318	0.64815	(4.0) 20	9.71536	9.5275	0.99161	1.24194
h									
(1.0) 6	+9.61475	-9.8351	+1.26144	+0.68045	21	+9.71705	-9.4722	+0.97884	+1.24654
7	9.61540	9.8536	1.25957	0.71041	22	9.71941	9.3931	0.96555	1.25097
8	9.61567	9.8584	1.25757	0.73833	23	9.72257	9.2943	0.95169	1.25521
9	9.61608	9.8491	1.25542	0.76446	24	9.72646	9.1912	0.93722	1.25928
10	9.61705	9.8278	1.25312	0.78899	25	9.73085	9.1179	0.92212	1.26318
11	+9.61891	-9.7982	+1.25069	+0.81210	26	+9.73538	-9.1136	+0.90632	+1.26691
12	9.62163	9.7663	1.24811	0.83393	27	9.73959	9.1787	0.88978	1.27048
13	9.62508	9.7383	1.24538	0.85461	28	9.74317	9.2739	0.87244	1.27388
14	9.62891	9.7202	1.24250	0.87424	29	9.74588	9.3630	0.85423	1.27712
15	9.63271	9.7151	1.23947	0.89291	30	9.74780	9.4270	0.83508	1.28021
16	+9.63624	-9.7225	+1.23629	+0.91069	Dec. 1	+9.74919	-9.4586	+0.81489	+1.28314
17	9.63924	9.7386	1.23295	0.92765	2	9.75038	9.4553	0.79358	1.28591
18	9.64161	9.7594	1.22945	0.94387	3	9.75178	9.4175	0.77102	1.28853
19	9.64338	9.7802	1.22578	0.95938	h				
20	9.64455	9.7975	1.22195	0.97424	(5.0) 4	9.75374	9.3467	0.74707	1.29100
h					5	9.75638	9.2470	0.72157	1.29333
(2.0) 21	+9.64525	-9.8082	+1.21795	+0.98849	6	+9.75970	-9.1300	+0.69433	+1.29550
22	9.64571	9.8100	1.21378	1.00217	7	9.76347	9.0241	0.66511	1.29753
23	9.64610	9.8008	1.20944	1.01531	8	9.76745	8.9694	0.63363	1.29942
24	9.64683	9.7794	1.20492	1.02795	9	9.77133	8.9934	0.59953	1.30116
25	9.64817	9.7462	1.20020	1.04011	10	9.77490	9.0766	0.56236	1.30275
26	+9.65038	-9.7036	+1.19531	+1.05181	11	+9.77801	-9.1784	+0.52155	+1.30421
27	9.65353	9.6579	1.19022	1.06308	12	9.78063	9.2742	0.47634	1.30553
28	9.65750	9.6188	1.18494	1.07395	13	9.78277	9.3522	0.42570	1.30670
29	9.66194	9.5977	1.17945	1.08442	14	9.78447	9.4104	0.36820	1.30774
30	9.66636	9.6012	1.17376	1.09452	15	9.78586	9.4468	0.30172	1.30863
31	+9.67028	-9.6256	+1.16785	+1.10427	16	+9.78713	-9.4609	+0.22301	+1.30939
Nov. 1	9.67342	9.6608	1.16173	1.11368	17	9.78842	9.4516	0.12661	1.31001
2	9.67554	9.6943	1.15538	1.12276	18	9.79003	9.4180	0.00230	1.31050
3	9.67685	9.7163	1.14880	1.13153	19	9.79213	9.3619	9.82722	1.31084
h					20	9.79490	9.2885	9.52885	1.31105
(3.0) 5	+9.67852	-9.7071	+1.13490	+1.14819	h				
6	9.67975	9.6741	1.12759	1.15609	(6.0) 21	+9.79832	-9.2175	+7.59874	+1.31112
7	9.68172	9.6250	1.12000	1.16372	22	9.80223	9.1781	-9.51860	1.31105
8	9.68450	9.5657	1.11214	1.17110	23	9.80634	9.1992	9.82218	1.31085
9	9.68801	9.5061	1.10399	1.17822	24	9.81029	9.2765	9.99904	1.31050
10	+9.69197	-9.4573	+1.09555	+1.18510	25	9.81379	9.3782	0.12427	1.31002
11	9.69602	9.4304	1.08679	1.19175	26	+9.81658	-9.4751	-0.22124	+1.30941
12	9.69993	9.4291	1.07772	1.19816	27	9.81863	9.5519	0.30035	1.30865
13	9.70342	9.4487	1.06831	1.20436	28	9.82008	9.6029	0.36712	1.30775
14	9.70638	9.4809	1.05855	1.21033	29	9.82123	9.6277	0.42486	1.30672
15	+9.70874	-9.5156	+1.04843	+1.21610	30	9.82242	9.6281	0.47570	1.30554
16	+9.71058	-9.5451	+1.03792	+1.22166	31	+9.82396	-9.6107	-0.52107	+1.30423
					32	+9.82604	-9.5810	-0.56202	+1.30279

E = - 0".04 = - 0".003

[Eph 08]

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f'	f''	G		H		Log g .	Log h .	i	Log i .		
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.						
	y	s	s	°	h m	°	h m			"			
Jan.	0	-0.0015	-1.005	-0.015	157 12.1	10 28.8	351 21.7	23 25.4	+0.85761	+1.31020	-1.33	-0.1241	
	1	+0.0013	0.994	0.010	156 44.0	10 26.9	350 25.3	23 21.7	0.85215	1.30999	1.47	0.1684	
	2	0.0040	0.984	-0.003	156 21.2	10 25.4	349 28.9	23 17.9	0.84554	1.30976	1.62	0.2084	
	3	0.0067	0.973	+0.005	156 7.6	10 24.5	348 32.4	23 14.2	0.83809	1.30951	1.76	0.2450	
	4	0.0095	0.962	0.011	156 5.3	10 24.3	347 35.8	23 10.4	0.83045	1.30924	1.90	0.2786	
	h												
	(7.0)	5	0.0122	-0.951	+0.015	156 13.7	10 24.9	346 39.1	23 6.6	+0.82337	+1.30895	-2.04	-0.3096
	6	0.0150	0.940	0.015	156 28.6	10 25.9	345 42.4	23 2.8	0.81735	1.30864	2.18	0.3384	
	7	0.0177	0.930	0.012	156 44.7	10 27.0	344 45.6	22 59.0	0.81271	1.30831	2.32	0.3654	
	8	0.0204	0.919	0.007	156 56.5	10 27.8	343 48.7	22 55.2	0.80933	1.30796	2.46	0.3905	
	9	0.0232	0.909	+0.002	156 59.7	10 28.0	342 51.7	22 51.4	0.80674	1.30760	2.60	0.4142	
	10	0.0259	-0.898	-0.003	156 53.4	10 27.6	341 54.7	22 47.6	+0.80436	+1.30721	-2.73	-0.4365	
	11	0.0286	0.888	0.006	156 38.1	10 26.5	340 57.5	22 43.8	0.80169	1.30681	2.87	0.4576	
	12	0.0314	0.877	0.007	156 17.5	10 25.2	340 0.3	22 40.0	0.79829	1.30639	3.00	0.4776	
	13	0.0341	0.867	0.006	155 54.8	10 23.7	339 2.9	22 36.2	0.79394	1.30596	3.14	0.4966	
	14	0.0369	0.857	-0.004	155 33.5	10 22.2	338 5.4	22 32.4	0.78865	1.30550	3.27	0.5146	
	15	0.0396	-0.847	0.000	155 16.8	10 21.1	337 7.9	22 28.5	+0.78257	+1.30503	-3.40	-0.5318	
	16	0.0423	0.837	+0.004	155 6.8	10 20.5	336 10.2	22 24.7	0.77595	1.30455	3.53	0.5482	
	17	0.0451	0.827	0.007	155 4.5	10 20.3	335 12.3	22 20.8	0.76906	1.30405	3.66	0.5639	
18	0.0478	0.817	0.009	155 10.1	10 20.7	334 14.4	22 17.0	0.76221	1.30353	3.79	0.5789		
19	0.0506	0.807	0.010	155 23.2	10 21.5	333 16.3	22 13.1	0.75572	1.30300	3.92	0.5933		
Feb.	h												
	(8.0)	20	0.0533	-0.797	+0.009	155 42.1	10 22.8	332 18.1	22 9.2	+0.74991	+1.30246	-4.05	-0.6070
	21	0.0560	0.787	0.006	156 4.0	10 24.3	331 19.8	22 5.3	0.74502	1.30191	4.17	0.6202	
	22	0.0588	0.778	+0.001	156 24.7	10 25.7	330 21.3	22 1.4	0.74117	1.30134	4.29	0.6329	
	23	0.0615	0.768	-0.005	156 39.7	10 26.6	329 22.6	21 57.5	0.73832	1.30077	4.42	0.6451	
	24	0.0642	0.759	0.011	156 45.0	10 27.0	328 23.8	21 53.6	0.73609	1.30018	4.54	0.6568	
	25	0.0670	-0.749	-0.016	156 38.1	10 26.5	327 24.9	21 49.7	+0.73385	+1.29958	-4.66	-0.6681	
	26	0.0697	0.740	0.018	156 19.6	10 25.3	326 25.8	21 45.7	0.73087	1.29897	4.78	0.6789	
	27	0.0724	0.731	0.017	155 52.7	10 23.5	325 26.6	21 41.8	0.72662	1.29835	4.89	0.6894	
	28	0.0752	0.722	0.013	155 23.2	10 21.5	324 27.2	21 37.8	0.72062	1.29773	5.01	0.6995	
	29	0.0779	0.713	-0.007	154 58.1	10 19.9	323 27.6	21 33.8	0.71286	1.29710	5.12	0.7092	
	30	0.0807	-0.704	+0.001	154 43.5	10 18.9	322 27.9	21 29.9	+0.70368	+1.29646	-5.23	-0.7185	
	31	0.0834	0.695	0.008	154 44.2	10 18.9	321 28.0	21 25.9	0.69394	1.29581	5.34	0.7276	
	1	0.0861	0.687	0.013	154 59.9	10 20.0	320 27.9	21 21.9	0.68443	1.29516	5.45	0.7363	
	2	0.0889	0.678	0.014	155 27.6	10 21.8	319 27.7	21 17.8	0.67619	1.29451	5.56	0.7447	
	3	0.0916	0.670	0.013	156 0.0	10 24.0	318 27.3	21 13.8	0.66978	1.29385	5.66	0.7528	
Feb.	h												
	(9.0)	4	0.0944	-0.661	+0.009	156 28.6	10 25.9	317 26.8	21 9.8	+0.66525	+1.29319	-5.76	-0.7606
	5	0.0971	0.653	+0.003	156 47.1	10 27.1	316 26.1	21 5.7	0.66218	1.29253	5.86	0.7682	
	6	0.0998	0.645	-0.002	156 51.8	10 27.5	315 25.2	21 1.7	0.65985	1.29187	5.96	0.7754	
	7	0.1026	0.637	0.005	156 42.9	10 26.9	314 24.2	20 57.6	0.65733	1.29120	6.06	0.7824	
	8	0.1053	0.629	0.007	156 24.4	10 25.6	313 23.0	20 53.5	0.65400	1.29054	6.16	0.7892	
	9	0.1080	-0.621	-0.006	156 0.7	10 24.0	312 21.6	20 49.4	+0.64944	+1.28988	-6.25	-0.7958	
	10	0.1108	0.613	-0.004	155 38.2	10 22.5	311 20.1	20 45.3	0.64364	1.28922	6.34	0.8021	
	11	0.1135	0.605	0.000	155 20.6	10 21.4	310 18.5	20 41.2	0.63667	1.28857	6.43	0.8081	
	12	0.1163	0.598	+0.003	155 11.6	10 20.8	309 16.7	20 37.1	0.62888	1.28792	6.52	0.8140	
	13	0.1190	0.590	0.007	155 13.0	10 20.9	308 14.7	20 33.0	0.62064	1.28727	6.60	0.8196	
	14	0.1217	-0.583	+0.010	155 25.8	10 21.7	307 12.5	20 28.8	+0.61237	+1.28663	-6.68	-0.8251	
	15	0.1245	-0.576	+0.011	155 49.1	10 23.3	306 10.2	20 24.7	+0.60451	+1.28600	-6.76	-0.8303	

(CONSTANTS OF PARIS CONFERENCE.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		f'		G		H		Log g .	Log h .	i	Log i .
		In Time.		In Time.		In Arc.		In Arc.					
		s	s	°	'	°	'	°	'				
Feb.	15	0.1245	-0.576	+0.011	155 49.1	10 23.3	306 10.2	20 24.7	+0.60451	+1.28600	-6.76	-0.8303	
	16	0.1272	0.568	0.010	156 21.2	10 25.4	305 7.8	20 20.5	0.59751	1.28538	6.84	0.8353	
	17	0.1300	0.561	0.008	156 58.7	10 27.9	304 5.2	20 16.3	0.59187	1.28476	6.92	0.8402	
	18	0.1327	0.554	+0.003	157 35.8	10 30.4	303 2.4	20 12.2	0.58772	1.28415	7.00	0.8448	
h	19	0.1354	0.547	-0.002	158 5.9	10 32.4	301 59.5	20 8.0	0.58508	1.28355	7.07	0.8493	
(10.0)	20	0.1382	-0.540	-0.008	158 23.4	10 33.6	300 56.5	20 3.8	+0.58351	+1.28296	-7.14	-0.8536	
	21	0.1409	0.534	0.013	158 23.7	10 33.6	299 53.3	19 59.6	0.58231	1.28239	7.20	0.8576	
	22	0.1436	0.527	0.017	158 7.0	10 32.5	298 50.0	19 55.3	0.58044	1.28183	7.27	0.8616	
	23	0.1464	0.520	0.017	157 36.6	10 30.4	297 46.5	19 51.1	0.57702	1.28128	7.34	0.8654	
	24	0.1491	0.514	0.015	157 0.0	10 28.0	296 42.9	19 46.9	0.57130	1.28074	7.40	0.8690	
	25	0.1518	-0.507	-0.009	156 25.5	10 25.7	295 39.2	19 42.6	+0.56325	+1.28022	-7.45	-0.8724	
	26	0.1546	0.501	-0.002	156 3.4	10 24.2	294 35.3	19 38.4	0.55295	1.27972	7.51	0.8757	
	27	0.1573	0.494	+0.005	156 0.4	10 24.0	293 31.3	19 34.1	0.54135	1.27923	7.56	0.8788	
	28	0.1601	0.488	0.010	156 19.6	10 25.3	292 27.2	19 29.8	0.52977	1.27875	7.62	0.8818	
	29	0.1628	0.482	0.013	156 57.2	10 27.8	291 23.0	19 25.5	0.51956	1.27830	7.67	0.8846	
Mar.	1	0.1655	-0.476	+0.012	157 44.8	10 31.0	290 18.7	19 21.2	+0.51179	+1.27786	-7.71	-0.8873	
	2	0.1683	0.470	0.009	158 29.4	10 34.0	289 14.3	19 17.0	0.50680	1.27745	7.76	0.8898	
	3	0.1710	0.464	+0.004	159 0.2	10 36.0	288 9.8	19 12.7	0.50418	1.27705	7.80	0.8921	
	4	0.1738	0.458	-0.001	159 10.4	10 36.7	287 5.2	19 8.3	0.50277	1.27667	7.84	0.8943	
h	5	0.1765	0.452	0.005	158 59.5	10 36.0	286 0.6	19 4.0	0.50149	1.27631	7.88	0.8964	
(11.0)	6	0.1792	-0.446	-0.007	158 31.9	10 34.1	284 55.9	18 59.7	+0.49916	+1.27597	-7.91	-0.8983	
	7	0.1820	0.440	0.007	157 54.3	10 31.6	283 51.1	18 55.4	0.49517	1.27566	7.95	0.9001	
	8	0.1847	0.434	0.005	157 15.2	10 29.0	282 46.3	18 51.1	0.48939	1.27537	7.98	0.9018	
	9	0.1875	0.428	-0.001	156 41.2	10 26.7	281 41.5	18 46.8	0.48191	1.27509	8.00	0.9033	
	10	0.1902	0.422	+0.003	156 17.7	10 25.2	280 36.5	18 42.5	0.47315	1.27485	8.03	0.9046	
	11	0.1929	-0.417	+0.007	156 8.3	10 24.6	279 31.6	18 38.1	+0.46353	+1.27462	-8.05	-0.9059	
	12	0.1957	0.411	0.010	156 14.4	10 25.0	278 26.7	18 33.8	0.45387	1.27442	8.07	0.9070	
	13	0.1984	0.405	0.011	156 35.8	10 26.4	277 21.7	18 29.4	0.44468	1.27424	8.09	0.9079	
	14	0.2011	0.400	0.011	157 10.0	10 28.7	276 16.7	18 25.1	0.43653	1.27409	8.11	0.9088	
	15	0.2039	0.394	0.009	157 51.8	10 31.5	275 11.7	18 20.8	0.43011	1.27396	8.12	0.9094	
	16	0.2066	-0.388	+0.005	158 34.6	10 34.3	274 6.7	18 16.4	+0.42584	+1.27386	-8.13	-0.9100	
	17	0.2094	0.383	0.000	159 9.0	10 36.6	273 1.8	18 12.1	0.42357	1.27377	8.14	0.9104	
	18	0.2121	0.377	-0.006	159 26.6	10 37.8	271 56.8	18 7.8	0.42295	1.27372	8.14	0.9107	
	19	0.2148	0.372	0.011	159 20.1	10 37.3	270 51.9	18 3.5	0.42321	1.27369	8.15	0.9109	
	20	0.2176	0.366	0.015	158 47.9	10 35.2	269 47.0	17 59.1	0.42302	1.27368	8.15	0.9110	
h	21	0.2203	-0.360	-0.017	157 53.7	10 31.6	268 42.1	17 54.8	+0.42102	+1.27370	-8.14	-0.9109	
(12.0)	22	0.2230	0.355	0.015	156 46.2	10 27.1	267 37.3	17 50.5	0.41615	1.27374	8.14	0.9107	
	23	0.2258	0.349	0.011	155 36.4	10 22.4	266 32.5	17 46.2	0.40788	1.27380	8.13	0.9103	
	24	0.2285	0.344	-0.004	154 37.8	10 18.5	265 27.7	17 41.8	0.39637	1.27389	8.12	0.9098	
	25	0.2312	0.338	+0.003	154 1.8	10 16.1	264 23.1	17 37.5	0.38237	1.27401	8.11	0.9092	
	26	0.2340	-0.332	+0.009	153 55.9	10 15.7	263 18.5	17 33.2	+0.36745	+1.27415	-8.10	-0.9085	
	27	0.2367	0.327	0.012	154 18.9	10 17.3	262 13.9	17 28.9	0.35360	1.27431	8.08	0.9076	
	28	0.2395	0.321	0.012	155 1.5	10 20.1	261 9.5	17 24.6	0.34267	1.27449	8.06	0.9066	
	29	0.2422	0.315	0.010	155 46.4	10 23.1	260 5.2	17 20.3	0.33564	1.27470	8.04	0.9054	
	30	0.2449	0.310	+0.005	156 16.4	10 25.1	259 0.9	17 16.1	0.33240	1.27493	8.02	0.9042	
	31	0.2477	-0.304	0.000	156 17.1	10 25.1	257 56.8	17 11.8	+0.33158	+1.27518	-7.99	-0.9028	
Apr.	1	0.2504	-0.298	-0.005	155 45.1	10 23.0	256 52.8	17 7.5	+0.33141	+1.27546	-7.97	-0.9013	

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f'	f''	G		H		Log g .	Log h .	i	Log i .
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	s	s	°	h m	°	h m			"	
Apr. 1	0.2504	-0.298	-0.005	155 45.1	10 23.0	256 52.8	17 7.5	+0.33141	+1.27546	-7.97	-0.9013
2	0.2532	0.292	0.008	154 43.4	10 18.9	255 48.9	17 3.3	0.33040	1.27575	7.94	0.8996
3	0.2559	0.286	0.008	153 21.6	10 13.4	254 45.1	16 59.0	0.32726	1.27607	7.90	0.8978
4	0.2586	0.280	0.006	151 50.2	10 7.3	253 41.5	16 54.8	0.32149	1.27641	7.87	0.8959
h 5	0.2614	0.274	-0.003	150 20.6	10 1.4	252 38.0	16 50.5	0.31318	1.27676	7.83	0.8938
(13.0) 6	0.2641	-0.268	+0.001	149 0.3	9 56.0	251 34.6	16 46.3	+0.30253	+1.27714	-7.79	-0.8916
7	0.2668	0.262	0.005	147 56.7	9 51.8	250 31.4	16 42.1	0.29032	1.27754	7.75	0.8892
8	0.2696	0.256	0.009	147 13.0	9 48.9	249 28.4	16 37.9	0.27716	1.27795	7.70	0.8867
9	0.2723	0.249	0.011	146 50.1	9 47.3	248 25.5	16 33.7	0.26383	1.27838	7.66	0.8841
10	0.2751	0.243	0.012	146 47.9	9 47.2	247 22.8	16 29.5	0.25118	1.27883	7.61	0.8813
11	0.2778	-0.237	+0.010	147 2.3	9 48.2	246 20.3	16 25.4	+0.24050	+1.27929	-7.56	-0.8784
12	0.2805	0.230	0.007	147 24.7	9 49.6	245 17.9	16 21.2	0.23243	1.27977	7.51	0.8754
13	0.2833	0.224	+0.002	147 42.6	9 50.8	244 15.8	16 17.1	0.22753	1.28026	7.45	0.8722
14	0.2860	0.217	-0.004	147 42.5	9 50.8	243 13.8	16 12.9	0.22589	1.28077	7.39	0.8688
15	0.2888	0.211	0.009	147 11.5	9 48.8	242 11.9	16 8.8	0.22664	1.28129	7.33	0.8653
16	0.2915	-0.204	-0.014	146 0.8	9 44.0	241 10.3	16 4.7	+0.22820	+1.28183	-7.27	-0.8616
17	0.2942	0.197	0.016	144 9.4	9 36.6	240 8.9	16 0.6	0.22871	1.28237	7.21	0.8578
18	0.2970	0.191	0.015	141 45.3	9 27.0	239 7.6	15 56.5	0.22654	1.28293	7.14	0.8538
19	0.2997	0.184	0.012	139 1.2	9 16.1	238 6.5	15 52.4	0.22035	1.28350	7.08	0.8497
h 20	0.3024	0.177	-0.006	136 12.7	9 4.9	237 5.7	15 48.4	0.20938	1.28407	7.01	0.8454
(14.0) 21	0.3052	-0.170	+0.001	133 37.3	8 54.5	236 5.0	15 44.3	+0.19363	+1.28466	-6.93	-0.8409
22	0.3079	0.162	0.008	131 30.7	8 46.0	235 4.5	15 40.3	0.17422	1.28525	6.86	0.8363
23	0.3106	0.155	0.012	130 4.5	8 40.3	234 4.2	15 36.3	0.15320	1.28586	6.78	0.8315
24	0.3134	0.148	0.013	129 18.9	8 37.3	233 4.1	15 32.3	0.13329	1.28646	6.71	0.8265
25	0.3161	0.140	0.011	129 2.4	8 36.2	232 4.1	15 28.3	0.11170	1.28708	6.63	0.8213
26	0.3189	-0.133	+0.007	128 52.8	8 35.5	231 4.4	15 24.3	+0.10851	+1.28770	-6.55	-0.8159
27	0.3216	0.125	+0.001	128 23.4	8 33.6	230 4.9	15 20.3	0.10619	1.28832	6.46	0.8104
28	0.3243	0.118	-0.004	127 12.1	8 28.8	229 5.6	15 16.4	0.10881	1.28895	6.38	0.8046
29	0.3271	0.110	0.008	125 11.9	8 20.8	228 6.5	15 12.4	0.11394	1.28958	6.29	0.7987
30	0.3298	0.102	0.009	122 28.1	8 9.9	227 7.6	15 8.5	0.11922	1.29021	6.20	0.7925
May 1	0.3326	-0.094	-0.008	119 12.0	7 56.8	226 8.9	15 4.6	+0.12280	+1.29085	-6.11	-0.7861
2	0.3353	0.086	0.005	115 38.9	7 42.6	225 10.2	15 0.7	0.12372	1.29148	6.02	0.7795
3	0.3380	0.078	-0.001	112 0.6	7 28.0	224 12.0	14 56.8	0.12167	1.29211	5.93	0.7727
4	0.3408	0.070	+0.004	108 27.5	7 13.8	223 13.9	14 52.9	0.11664	1.29275	5.83	0.7657
h 5	0.3435	0.062	0.008	105 7.2	7 0.5	222 16.0	14 49.1	0.10890	1.29338	5.73	0.7584
(15.0) 6	0.3462	-0.054	+0.010	102 6.6	6 48.4	221 18.3	14 45.2	+0.09915	+1.29401	-5.63	-0.7509
7	0.3490	0.045	0.011	99 29.7	6 38.0	220 20.8	14 41.4	0.08817	1.29463	5.53	0.7431
8	0.3517	0.037	0.011	97 19.4	6 29.3	219 23.5	14 37.6	0.07684	1.29526	5.43	0.7350
9	0.3545	0.028	0.008	95 36.2	6 22.4	218 26.3	14 33.8	0.06673	1.29587	5.33	0.7267
10	0.3572	0.020	+0.003	94 16.7	6 17.1	217 29.4	14 30.0	0.05964	1.29649	5.23	0.7181
11	0.3599	-0.011	-0.002	93 13.9	6 12.9	216 32.7	14 26.2	+0.05744	+1.29709	-5.12	-0.7092
12	0.3627	-0.002	0.008	92 12.8	6 8.9	215 36.1	14 22.4	0.06170	1.29769	5.01	0.7000
13	0.3654	+0.007	0.013	90 52.5	6 3.5	214 39.7	14 18.6	0.07245	1.29829	4.90	0.6905
14	0.3682	0.010	0.016	88 50.8	5 56.0	213 43.5	14 14.9	0.08845	1.29887	4.79	0.6806
15	0.3709	0.025	0.016	86 26.7	5 45.8	212 47.5	14 11.2	0.10730	1.29945	4.68	0.6704
16	0.3736	+0.034	-0.013	83 11.4	5 32.8	211 51.7	14 7.4	+0.12624	+1.30002	-4.57	-0.6598
17	0.3764	+0.043	-0.007	79 24.9	5 17.7	210 56.0	14 3.7	+0.14277	+1.30058	-4.46	-0.6488

(CONSTANTS OF PARIS CONFERENCE.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		f'		G		H		Log g .	Log h .	i	Log i .
		In Time.	s	In Time.	s	In Arc.	In Time.	In Arc.	In Time.				
	y	s		s		°	h m	°	h m			"	
May	17	0.3764	+0.043	-0.007		79 24.9	5 17.7	210 56.0	14 3.7	+0.14277	+1.30058	-4.46	-0.6488
	18	0.3791	0.053	0.000		75 20.4	5 1.4	210 0.5	14 0.0	0.15525	1.30113	4.34	0.6375
	19	0.3818	0.062	+0.007		71 13.4	4 44.9	209 5.1	13 56.3	0.16281	1.30167	4.22	0.6257
	20	0.3846	0.071	0.012		67 21.9	4 29.5	208 9.9	13 52.7	0.16559	1.30220	4.11	0.6134
	21	0.3873	0.081	0.014		64 0.9	4 16.1	207 14.8	13 49.0	0.16475	1.30272	3.99	0.6007
h	(16.0)	22	0.3900	+0.091	+0.013	61 22.3	4 5.5	206 19.9	13 45.3	+0.16217	+1.30322	-3.87	-0.5875
		23	0.3928	0.100	0.009	59 33.4	3 58.2	205 25.1	13 41.7	0.16040	1.30372	3.75	0.5737
		24	0.3955	0.110	+0.003	58 25.7	3 53.7	204 30.5	13 38.0	0.16226	1.30420	3.63	0.5593
		25	0.3983	0.120	-0.002	57 46.8	3 51.1	203 36.0	13 34.4	0.16944	1.30467	3.50	0.5444
		26	0.4010	0.130	0.007	57 15.8	3 49.1	202 41.6	13 30.8	0.18233	1.30512	3.38	0.5288
		27	0.4037	+0.140	-0.009	56 33.1	3 46.2	201 47.4	13 27.2	+0.19973	+1.30556	-3.25	-0.5124
		28	0.4065	0.150	0.009	55 27.1	3 41.8	200 53.2	13 23.5	0.21955	1.30599	3.13	0.4954
		29	0.4092	0.160	0.006	53 57.1	3 35.8	199 59.2	13 19.9	0.23955	1.30640	3.00	0.4775
		30	0.4120	0.170	-0.002	52 5.4	3 28.4	199 5.4	13 16.4	0.25824	1.30679	2.88	0.4587
		31	0.4147	0.180	+0.002	50 0.6	3 20.0	198 11.6	13 12.8	0.27444	1.30717	2.75	0.4389
June	1	0.4174	+0.190	+0.006		47 49.2	3 11.3	197 17.9	13 9.2	+0.28779	+1.30754	-2.62	-0.4181
		2	0.4202	0.201	0.009	45 38.3	3 2.6	196 24.4	13 5.6	0.29823	1.30788	2.49	0.3961
		3	0.4229	0.211	0.011	43 32.6	2 54.2	195 30.9	13 2.1	0.30607	1.30821	2.36	0.3728
		4	0.4256	0.221	0.011	41 37.0	2 46.5	194 37.5	12 58.5	0.31173	1.30853	2.23	0.3481
h	(17.0)	5	0.4284	0.231	0.009	39 56.7	2 39.7	193 44.3	12 55.0	0.31571	1.30883	2.10	0.3217
		6	0.4311	+0.242	+0.005	38 35.8	2 34.4	192 51.1	12 51.4	+0.31875	+1.30911	-1.97	-0.2936
		7	0.4339	0.252	-0.001	37 37.4	2 30.5	191 58.0	12 47.9	0.32189	1.30937	1.83	0.2634
		8	0.4366	0.263	0.007	37 2.9	2 28.2	191 5.0	12 44.3	0.32635	1.30961	1.70	0.2307
		9	0.4393	0.273	0.012	36 47.6	2 27.2	190 12.1	12 40.8	0.33335	1.30984	1.57	0.1953
		10	0.4421	0.284	0.016	36 42.2	2 26.8	189 19.2	12 37.3	0.34391	1.31005	1.43	0.1567
		11	0.4448	+0.295	-0.017	36 33.3	2 26.2	188 26.4	12 33.8	+0.35801	+1.31024	-1.30	-0.1141
		12	0.4476	0.305	0.015	36 9.1	2 24.6	187 33.6	12 30.2	0.37478	1.31041	1.17	0.0668
		13	0.4503	0.316	0.010	35 20.4	2 21.4	186 40.8	12 26.7	0.39282	1.31057	1.03	0.0136
		14	0.4530	0.327	-0.003	34 5.0	2 16.3	185 48.2	12 23.2	0.41029	1.31070	0.90	9.9529
		15	0.4558	0.337	+0.004	32 28.4	2 9.9	184 55.6	12 19.7	0.42563	1.31082	0.76	9.8820
		16	0.4585	+0.348	+0.010	30 39.4	2 2.6	184 3.0	12 16.2	+0.43799	+1.31091	-0.63	-9.7972
		17	0.4612	0.359	0.014	28 49.1	1 55.3	183 10.5	12 12.7	0.44688	1.31099	0.49	9.6916
		18	0.4640	0.370	0.014	27 10.4	1 48.7	182 17.9	12 9.2	0.45278	1.31105	0.36	9.5517
		19	0.4667	0.380	0.011	25 52.3	1 43.5	181 25.4	12 5.7	0.45657	1.31109	0.22	9.3436
h	(18.0)	20	0.4694	0.391	0.006	25 0.6	1 40.0	180 32.9	12 2.2	0.45953	1.31111	-0.08	-8.9294
		21	0.4722	+0.402	+0.001	24 34.3	1 38.3	179 40.4	11 58.7	+0.46326	+1.31112	+0.05	+8.7045
		22	0.4749	0.412	-0.005	24 27.3	1 37.8	178 47.9	11 55.2	0.46885	1.31110	0.19	9.2701
		23	0.4777	0.423	0.008	24 29.8	1 38.0	177 55.4	11 51.7	0.47683	1.31106	0.32	9.5076
		24	0.4804	0.434	0.009	24 29.8	1 38.0	177 2.8	11 48.2	0.48711	1.31101	0.46	9.6602
		25	0.4831	0.445	0.007	24 19.4	1 37.3	176 10.3	11 44.7	0.49892	1.31094	0.59	9.7728
		26	0.4859	+0.455	-0.003	23 54.2	1 35.6	175 17.7	11 41.2	+0.51123	+1.31084	+0.73	+9.8620
		27	0.4886	0.466	+0.001	23 14.1	1 32.9	174 25.2	11 37.7	0.52317	1.31073	0.86	9.9359
		28	0.4914	0.477	0.005	22 21.1	1 29.4	173 32.6	11 34.2	0.53408	1.31060	1.00	9.9989
		29	0.4941	0.487	0.009	21 20.1	1 25.3	172 39.9	11 30.7	0.54353	1.31045	1.13	0.0538
		30	0.4968	0.498	0.011	20 15.3	1 21.0	171 47.2	11 27.1	0.55119	1.31029	1.27	0.1024
July	1	0.4996	+0.509	+0.011		19 9.7	1 16.6	170 54.5	11 23.6	+0.55731	+1.31010	+1.40	+0.1461
		2	0.5023	+0.519	+0.010	18 7.9	1 12.5	170 1.8	11 20.1	+0.56197	+1.30990	+1.53	+0.1856

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f	f''	G		H		Log g .	Log h .	i	Log i .	
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.					
July h (19.0) h (20.0)	y	s	s	° ' "	h m	° ' "	h m			"		
	1	0.4996	+0.509	+0.011	19 9.7	1 16.6	170 54.5	11 23.6	+0.55731	+1.31010	+1.40	+0.1461
	2	0.5023	0.519	0.010	18 7.9	1 12.5	170 1.8	11 20.1	0.56197	1.30990	1.53	0.1856
	3	0.5050	0.530	0.006	17 13.6	1 8.9	169 8.9	11 16.6	0.56547	1.30968	1.67	0.2217
	4	0.5078	0.540	+0.001	16 30.3	1 6.0	168 16.1	11 13.1	0.56818	1.30944	1.80	0.2549
	5	0.5105	0.551	-0.005	16 1.1	1 4.1	167 23.2	11 9.5	0.57072	1.30918	1.93	0.2857
	6	0.5133	+0.561	-0.011	15 46.9	1 3.1	166 30.2	11 6.0	+0.57380	+1.30890	+2.06	+0.3143
	7	0.5160	0.571	0.016	15 44.9	1 3.0	165 37.2	11 2.5	0.57824	1.30861	2.19	0.3410
	8	0.5187	0.582	0.018	15 49.9	1 3.3	164 44.0	10 58.9	0.58466	1.30830	2.32	0.3660
	9	0.5215	0.592	0.017	15 53.7	1 3.6	163 50.8	10 55.4	0.59323	1.30798	2.45	0.3896
	10	0.5242	0.602	0.013	15 48.1	1 3.2	162 57.6	10 51.8	0.60356	1.30764	2.58	0.4119
	11	0.5270	+0.613	-0.007	15 26.8	1 1.8	162 4.2	10 48.3	+0.61483	+1.30728	+2.71	+0.4329
	12	0.5297	0.623	+0.001	14 47.7	0 59.2	161 10.8	10 44.7	0.62590	1.30691	2.84	0.4529
	13	0.5324	0.633	0.008	13 53.5	0 55.6	160 17.2	10 41.1	0.63581	1.30652	2.96	0.4718
	14	0.5352	0.643	0.013	12 50.3	0 51.4	159 23.5	10 37.6	0.64385	1.30611	3.09	0.4899
	15	0.5379	0.653	0.014	11 46.1	0 47.1	158 29.8	10 34.0	0.64972	1.30570	3.21	0.5071
	16	0.5406	+0.663	+0.013	10 48.7	0 43.2	157 35.9	10 30.4	+0.65363	+1.30526	+3.34	+0.5236
	17	0.5434	0.673	0.009	10 5.0	0 40.3	156 41.9	10 26.8	0.65622	1.30482	3.46	0.5393
	18	0.5461	0.682	+0.003	9 38.3	0 38.6	155 47.8	10 23.2	0.65827	1.30436	3.58	0.5544
	19	0.5488	0.692	-0.003	9 27.6	0 37.8	154 53.6	10 19.6	0.66074	1.30388	3.70	0.5689
	20	0.5516	0.702	0.006	9 28.2	0 37.9	153 59.2	10 15.9	0.66436	1.30340	3.83	0.5827
	21	0.5543	+0.711	-0.008	9 33.5	0 38.2	153 4.6	10 12.3	+0.66947	+1.30290	+3.94	+0.5961
	22	0.5571	0.721	0.007	9 36.5	0 38.4	152 10.0	10 8.7	0.67595	1.30239	4.06	0.6089
	23	0.5598	0.730	-0.004	9 32.0	0 38.1	151 15.2	10 5.0	0.68335	1.30187	4.18	0.6212
	24	0.5625	0.740	0.000	9 17.2	0 37.1	150 20.2	10 1.3	0.69105	1.30133	4.30	0.6331
	25	0.5653	0.749	+0.005	8 52.2	0 35.5	149 25.1	9 57.7	0.69853	1.30079	4.41	0.6446
26	0.5680	+0.758	+0.009	8 18.3	0 33.2	148 29.8	9 54.0	+0.70530	+1.30024	+4.52	+0.6556	
27	0.5708	0.767	0.011	7 38.5	0 30.6	147 34.4	9 50.3	0.71111	1.29968	4.64	0.6663	
28	0.5735	0.776	0.012	6 55.6	0 27.7	146 38.9	9 46.6	0.71587	1.29911	4.75	0.6766	
29	0.5762	0.785	0.011	6 12.4	0 24.8	145 43.1	9 42.9	0.71955	1.29853	4.86	0.6865	
30	0.5790	0.794	0.008	5 32.0	0 22.1	144 47.2	9 39.2	0.72220	1.29794	4.97	0.6961	
Aug. h (21.0)	31	0.5817	+0.803	+0.003	4 57.5	0 19.8	143 51.2	9 35.4	+0.72402	+1.29735	+5.07	+0.7054
	1	0.5844	0.812	-0.003	4 31.7	0 18.1	142 55.0	9 31.7	0.72531	1.29675	5.18	0.7144
	2	0.5872	0.821	0.009	4 16.5	0 17.1	141 58.6	9 27.9	0.72655	1.29614	5.28	0.7230
	3	0.5899	0.829	0.014	4 12.2	0 16.8	141 2.0	9 24.1	0.72833	1.29553	5.39	0.7314
	4	0.5927	0.838	0.018	4 16.3	0 17.1	140 5.3	9 20.4	0.73112	1.29492	5.49	0.7395
	5	0.5954	+0.846	-0.018	4 24.5	0 17.6	139 8.4	9 16.6	+0.73539	+1.29430	+5.59	+0.7473
	6	0.5981	0.855	0.015	4 30.2	0 18.0	138 11.3	9 12.8	0.74115	1.29368	5.69	0.7548
	7	0.6009	0.863	-0.010	4 27.8	0 17.9	137 14.1	9 8.9	0.74816	1.29305	5.78	0.7622
	8	0.6036	0.871	-0.003	4 13.1	0 16.9	136 16.6	9 5.1	0.75572	1.29243	5.88	0.7693
	9	0.6064	0.879	+0.004	3 45.2	0 15.0	135 19.0	9 1.3	0.76308	1.29180	5.98	0.7761
	10	0.6091	+0.887	+0.010	3 7.0	0 12.5	134 21.2	8 57.4	+0.76943	+1.29117	+6.07	+0.7828
	11	0.6118	0.895	0.013	2 23.2	0 9.5	133 23.3	8 53.6	0.77441	1.29054	6.16	0.7892
	12	0.6146	0.903	0.013	1 40.5	0 6.7	132 25.1	8 49.7	0.77779	1.28992	6.24	0.7954
	13	0.6173	0.911	0.009	1 4.8	0 4.3	131 26.7	8 45.8	0.77982	1.28929	6.33	0.8014
	14	0.6200	0.919	+0.004	0 40.6	0 2.7	130 28.2	8 41.9	0.78103	1.28867	6.42	0.8072
	15	0.6228	+0.926	-0.001	0 29.3	0 2.0	129 29.4	8 38.0	+0.78207	+1.28805	+6.50	+0.8128
16	0.6255	+0.934	-0.005	0 29.1	0 1.9	128 30.5	8 34.0	+0.78362	+1.28744	+6.58	+0.8182	

(CONSTANTS OF PARIS CONFERENCE.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f	f'	G		H		Log g .	Log h .	i	Log i .	
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.					
		y	s	s	$^{\circ}$	h m	$^{\circ}$	h m			"	
Aug.	16	0.6255	+0.934	-0.005	0 29.1	0 1.9	128 30.5	8 34.0	+0.78362	+1.28744	+6.58	+0.8182
	17	0.6282	0.941	0.007	0 36.1	0 2.4	127 31.3	8 30.1	0.78609	1.28682	6.66	0.8234
	18	0.6310	0.949	0.007	0 44.6	0 3.0	126 32.0	8 26.2	0.78969	1.28622	6.74	0.8285
	19	0.6337	0.956	-0.004	0 49.9	0 3.3	125 32.5	8 22.2	0.79421	1.28562	6.82	0.8334
h	20	0.6365	0.963	0.000	0 48.2	0 3.2	124 32.8	8 18.2	0.79930	1.28503	6.89	0.8381
(22.0)	21	0.6392	+0.970	+0.004	0 38.3	0 2.6	123 32.9	8 14.2	+0.80454	+1.28444	+6.96	+0.8426
	22	0.6419	0.977	0.008	0 20.6	0 1.4	122 32.8	8 10.2	0.80948	1.28387	7.03	0.8470
	23	0.6447	0.984	0.011	359 56.6	23 59.8	121 32.5	8 6.2	0.81381	1.28330	7.10	0.8512
	24	0.6474	0.991	0.013	359 28.3	23 57.9	120 32.0	8 2.1	0.81738	1.28274	7.17	0.8552
	25	0.6502	0.998	0.012	358 58.6	23 55.9	119 31.4	7 58.1	0.82012	1.28219	7.23	0.8591
	26	0.6529	+1.005	+0.009	358 29.6	23 54.0	118 30.6	7 54.0	+0.82202	+1.28166	+7.29	+0.8628
	27	0.6556	1.012	+0.005	358 3.9	23 52.3	117 29.6	7 50.0	0.82318	1.28113	7.35	0.8664
	28	0.6584	1.018	0.000	357 44.0	23 50.9	116 28.4	7 45.9	0.82377	1.28062	7.41	0.8698
	29	0.6611	1.025	-0.006	357 32.1	23 50.1	115 27.0	7 41.8	0.82406	1.28012	7.47	0.8731
	30	0.6638	1.031	0.012	357 29.3	23 50.0	114 25.5	7 37.7	0.82445	1.27964	7.52	0.8762
	31	0.6666	+1.038	-0.016	357 34.9	23 50.3	113 23.9	7 33.6	+0.82540	+1.27917	+7.57	+0.8792
Sept.	1	0.6693	1.044	0.018	357 46.2	23 51.1	112 22.0	7 29.5	0.82735	1.27872	7.62	0.8820
	2	0.6721	1.051	0.016	357 58.8	23 51.9	111 20.0	7 25.3	0.83060	1.27828	7.67	0.8847
	3	0.6748	1.057	0.012	358 7.4	23 52.5	110 17.9	7 21.2	0.83500	1.27786	7.71	0.8873
h	4	0.6775	1.063	-0.006	358 7.6	23 52.5	109 15.7	7 17.0	0.84022	1.27745	7.76	0.8897
(23.0)	5	0.6803	+1.069	+0.001	357 57.1	23 51.8	108 13.2	7 12.9	+0.84569	+1.27707	+7.80	+0.8920
	6	0.6830	1.076	0.008	357 36.5	23 50.4	107 10.7	7 8.7	0.85074	1.27670	7.84	0.8942
	7	0.6858	1.082	0.011	357 8.7	23 48.6	106 8.0	7 4.5	0.85486	1.27635	7.87	0.8962
	8	0.6885	1.088	0.012	356 38.9	23 46.6	105 5.2	7 0.3	0.85770	1.27602	7.91	0.8981
	9	0.6912	1.094	0.010	356 12.5	23 44.8	104 2.3	6 56.2	0.85935	1.27571	7.94	0.8998
	10	0.6940	+1.100	+0.005	355 54.2	23 43.6	102 59.2	6 52.0	+0.86009	+1.27542	+7.97	+0.9015
	11	0.6967	1.106	0.000	355 46.4	23 43.1	101 56.1	6 47.7	0.86040	1.27515	8.00	0.9030
	12	0.6994	1.112	-0.005	355 49.1	23 43.3	100 52.8	6 43.5	0.86091	1.27491	8.02	0.9043
	13	0.7022	1.118	0.008	355 59.8	23 44.0	99 49.4	6 39.3	0.86209	1.27468	8.05	0.9055
	14	0.7049	1.124	0.008	356 14.2	23 44.9	98 45.9	6 35.1	0.86419	1.27448	8.07	0.9067
	15	0.7076	+1.130	-0.006	356 27.8	23 45.9	97 42.4	6 30.8	+0.86722	+1.27430	+8.08	+0.9076
	16	0.7104	1.135	-0.002	356 36.7	23 46.4	96 38.7	6 26.6	0.87092	1.27414	8.10	0.9085
	17	0.7131	1.141	+0.003	356 38.9	23 46.6	95 35.0	6 22.3	0.87491	1.27400	8.11	0.9092
	18	0.7159	1.147	0.008	356 33.8	23 46.3	94 31.1	6 18.1	0.87883	1.27389	8.12	0.9098
h	19	0.7186	1.153	0.011	356 22.6	23 45.5	93 27.2	6 13.8	0.88237	1.27380	8.13	0.9103
(0.0)	20	0.7213	+1.158	+0.013	356 7.1	23 44.5	92 23.3	6 9.6	+0.88533	+1.27374	+8.14	+0.9106
	21	0.7241	1.164	0.013	355 49.2	23 43.3	91 19.3	6 5.3	0.88762	1.27370	8.14	0.9109
	22	0.7268	1.170	0.011	355 30.9	23 42.1	90 15.2	6 1.0	0.88920	1.27368	8.15	0.9110
	23	0.7296	1.176	0.007	355 14.6	23 41.0	89 11.1	5 56.7	0.89012	1.27369	8.15	0.9109
	24	0.7323	1.182	+0.002	355 2.7	23 40.2	88 7.0	5 52.5	0.89047	1.27372	8.14	0.9108
	25	0.7350	+1.188	-0.004	354 57.0	23 39.8	87 2.8	5 48.2	+0.89044	+1.27377	+8.14	+0.9105
	26	0.7378	1.193	0.010	354 58.9	23 39.9	85 58.7	5 43.9	0.89040	1.27385	8.13	0.9101
	27	0.7405	1.199	0.014	355 8.6	23 40.6	84 54.5	5 39.6	0.89076	1.27395	8.12	0.9095
	28	0.7432	1.205	0.017	355 24.4	23 41.6	83 50.3	5 35.4	0.89185	1.27407	8.11	0.9088
	29	0.7460	1.211	0.017	355 43.0	23 42.9	82 46.1	5 31.1	0.89390	1.27422	8.09	0.9080
	30	0.7487	+1.217	-0.013	356 0.0	23 44.0	81 42.0	5 26.8	+0.89708	+1.27440	+8.07	+0.9071
Oct.	1	0.7515	+1.223	-0.007	356 11.2	23 44.7	80 37.8	5 22.5	+0.90116	+1.27459	+8.05	+0.9060

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f'	f''	G		H		Log g .	Log h .	i	Log i .		
		In Time.	In Time.	In Arc.	In Time.	In Arc.	In Time.						
		s	s	°	h m	°	h m			"			
Oct.	1	0.7515	+1.223	-0.007	356 11.2	23 44.7	80 37.8	5 22.5	+0.90116	+1.27459	+8.05	+0.9060	
	2	0.7542	1.229	-0.001	356 13.6	23 44.9	79 33.7	5 18.2	0.90566	1.27481	8.03	0.9048	
	3	0.7569	1.235	+0.006	356 6.5	23 44.4	78 29.7	5 14.0	0.91005	1.27505	8.01	0.9035	
	4	0.7597	1.241	0.010	355 51.8	23 43.5	77 25.7	5 9.7	0.91382	1.27531	7.98	0.9021	
	h	5	0.7624	1.247	0.012	355 33.3	23 42.2	76 21.7	5 5.4	0.91658	1.27560	7.95	0.9005
	(1.0)	6	0.7652	+1.253	+0.010	355 15.8	23 41.1	75 17.7	5 1.2	+0.91827	+1.27591	+7.92	+0.8987
	7	0.7679	1.259	+0.006	355 3.9	23 40.3	74 13.9	4 56.9	0.91904	1.27623	7.89	0.8969	
	8	0.7706	1.265	0.000	355 0.8	23 40.1	73 10.1	4 52.7	0.91935	1.27658	7.85	0.8948	
	9	0.7734	1.271	-0.005	355 7.4	23 40.5	72 6.4	4 48.4	0.91968	1.27695	7.81	0.8927	
	10	0.7761	1.277	0.008	355 22.0	23 41.5	71 2.7	4 44.2	0.92050	1.27734	7.77	0.8904	
	11	0.7788	+1.284	-0.009	355 41.3	23 42.8	69 59.1	4 40.0	+0.92217	+1.27774	+7.73	+0.8880	
	12	0.7816	1.290	0.007	356 1.1	23 44.1	68 55.6	4 35.7	0.92471	1.27817	7.68	0.8854	
	13	0.7843	1.297	-0.004	356 17.7	23 45.2	67 52.2	4 31.5	0.92802	1.27861	7.63	0.8827	
	14	0.7870	1.303	+0.001	356 28.6	23 45.9	66 48.9	4 27.3	0.93176	1.27908	7.58	0.8798	
	15	0.7898	1.310	0.006	356 32.9	23 46.2	65 45.7	4 23.0	0.93553	1.27955	7.53	0.8768	
	16	0.7925	+1.316	+0.010	356 31.1	23 46.1	64 42.6	4 18.8	+0.93907	+1.28005	+7.47	+0.8736	
	17	0.7953	1.323	0.013	356 24.7	23 45.6	63 39.6	4 14.6	0.94212	1.28056	7.42	0.8702	
	18	0.7980	1.330	0.014	356 15.4	23 45.0	62 36.7	4 10.4	0.94457	1.28108	7.36	0.8667	
	19	0.8007	1.337	0.012	356 5.4	23 44.4	61 33.9	4 6.3	0.94642	1.28162	7.30	0.8631	
	h	20	0.8035	1.343	0.009	355 56.5	23 43.8	60 31.2	4 2.1	0.94770	1.28217	7.23	0.8592
	(2.0)	21	0.8062	+1.350	+0.004	355 50.9	23 43.4	59 28.7	3 57.9	+0.94847	+1.28274	+7.17	+0.8552
	22	0.8090	1.358	-0.002	355 50.1	23 43.3	58 26.2	3 53.7	0.94889	1.28331	7.10	0.8511	
	23	0.8117	1.365	0.008	355 55.5	23 43.7	57 23.9	3 49.6	0.94923	1.28390	7.03	0.8467	
	24	0.8144	1.372	0.013	356 7.6	23 44.5	56 21.8	3 45.4	0.94985	1.28450	6.95	0.8422	
	25	0.8172	1.379	0.016	356 25.3	23 45.7	55 19.8	3 41.3	0.95105	1.28510	6.88	0.8375	
	26	0.8199	+1.387	-0.016	356 46.3	23 47.1	54 17.9	3 37.2	+0.95310	+1.28572	+6.80	+0.8326	
	27	0.8226	1.394	0.014	357 6.9	23 48.5	53 16.2	3 33.1	0.95611	1.28634	6.72	0.8275	
	28	0.8254	1.402	0.009	357 23.2	23 49.5	52 14.6	3 29.0	0.95998	1.28697	6.64	0.8222	
	29	0.8281	1.410	-0.002	357 32.2	23 50.1	51 13.1	3 24.9	0.96437	1.28761	6.56	0.8167	
	30	0.8309	1.417	+0.005	357 32.5	23 50.2	50 11.9	3 20.8	0.96879	1.28825	6.47	0.8110	
	31	0.8336	+1.425	+0.010	357 25.4	23 49.7	49 10.7	3 16.7	+0.97275	+1.28890	+6.38	+0.8051	
Nov.	1	0.8363	1.433	0.012	357 13.6	23 48.9	48 9.8	3 12.7	0.97596	1.28954	6.30	0.7990	
	2	0.8391	1.441	0.011	357 1.1	23 48.1	47 9.0	3 8.6	0.97816	1.29020	6.20	0.7927	
	3	0.8418	1.450	0.007	356 52.4	23 47.5	46 8.3	3 4.6	0.97953	1.29085	6.11	0.7861	
	h	4	0.8446	1.458	+0.002	356 50.6	23 47.4	45 7.8	3 0.5	0.98038	1.29151	6.02	0.7793
	(3.0)	5	0.8473	+1.466	-0.004	356 57.0	23 47.8	44 7.5	+0.98117	+1.29216	+5.92	+0.7722	
	6	0.8500	1.475	0.008	357 10.8	23 48.7	43 7.3	2 52.5	0.98231	1.29282	5.82	0.7649	
	7	0.8528	1.483	0.010	357 29.6	23 50.0	42 7.2	2 48.5	0.98417	1.29347	5.72	0.7573	
	8	0.8555	1.492	0.009	357 49.6	23 51.3	41 7.3	2 44.5	0.98684	1.29413	5.62	0.7494	
	9	0.8582	1.501	0.006	358 7.2	23 52.5	40 7.6	2 40.5	0.99027	1.29478	5.51	0.7413	
	10	0.8610	+1.510	-0.001	358 20.1	23 53.3	39 8.0	2 36.5	+0.99418	+1.29542	+5.41	+0.7328	
	11	0.8637	1.519	+0.004	358 27.0	23 53.8	38 8.6	2 32.6	0.99823	1.29606	5.30	0.7241	
	12	0.8664	1.528	0.009	358 28.1	23 53.9	37 9.3	2 28.6	1.00212	1.29670	5.19	0.7150	
	13	0.8692	1.537	0.012	358 24.6	23 53.6	36 10.2	2 24.7	1.00562	1.29733	5.08	0.7056	
	14	0.8719	1.546	0.014	358 18.0	23 53.2	35 11.2	2 20.7	1.00860	1.29796	4.96	0.6958	
	15	0.8747	+1.555	+0.013	358 10.1	23 52.7	34 12.3	2 16.8	+1.01099	+1.29858	+4.85	+0.6857	
	16	0.8774	+1.565	+0.010	358 2.9	23 52.2	33 13.5	2 12.9	+1.01285	+1.29918	+4.73	+0.6752	

INDEPENDENT STAR-NUMBERS, 1908.

539

(CONSTANTS OF PARIS CONFERENCE.)

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. Sid Hour.		τ	f	f'	G		H		Log g .	Log h .	i	Log i .
			In Time.	In Time.	In Arc.	In Time	In Arc.	In Time.				
		y	s	s	°	h m	°	h m			"	
Nov.	16	0.8774	+1.565	+0.010	358	2.9 23 52.2	33 13.5	2 12.9	+1.01285	+1.29918	+4.73	+0.6752
	17	0.8801	1.575	+0.006	357	57.8 23 51.9	32 14.9	2 9.0	1.01431	1.29978	4.62	0.6643
	18	0.8829	1.584	0.000	357	56.5 23 51.8	31 16.5	2 5.1	1.01542	1.30038	4.50	0.6529
h	19	0.8856	1.594	-0.006	357	59.9 23 52.0	30 18.1	2 1.2	1.01645	1.30096	4.38	0.6412
(4.0)	20	0.8884	1.604	0.011	358	8.8 23 52.6	29 19.9	1 57.3	1.01762	1.30153	4.26	0.6289
	21	0.8911	+1.614	-0.015	358	22.4 23 53.5	28 21.8	1 53.5	+1.01925	+1.30209	+4.13	+0.6161
	22	0.8938	1.624	0.016	358	39.1 23 54.6	27 23.9	1 49.7	1.02156	1.30263	4.01	0.6028
	23	0.8966	1.634	0.015	358	56.0 23 55.7	26 26.0	1 45.7	1.02468	1.30317	3.88	0.5890
	24	0.8993	1.644	0.010	359	10.0 23 56.7	25 28.3	1 41.9	1.02854	1.30369	3.75	0.5745
	25	0.9020	1.654	-0.004	359	18.2 23 57.2	24 30.7	1 38.1	1.03291	1.30420	3.63	0.5594
	26	0.9048	+1.665	+0.003	359	19.0 23 57.3	23 33.2	1 34.2	+1.03744	+1.30469	+3.50	+0.5436
	27	0.9075	1.675	0.009	359	12.9 23 56.9	22 35.8	1 30.4	1.04166	1.30517	3.37	0.5271
	28	0.9102	1.686	0.013	359	1.8 23 56.1	21 38.6	1 26.6	1.04526	1.30563	3.23	0.5097
	29	0.9130	1.696	0.013	358	49.0 23 55.3	20 41.4	1 22.8	1.04800	1.30608	3.10	0.4915
	30	0.9157	1.706	0.010	358	38.1 23 54.5	19 44.3	1 19.0	1.04995	1.30651	2.97	0.4724
Dec.	1	0.9185	+1.717	+0.005	358	32.2 23 54.1	18 47.2	1 15.1	+1.05136	+1.30692	+2.83	+0.4522
	2	0.9212	1.728	-0.002	358	33.1 23 54.2	17 50.5	1 11.4	1.05255	1.30732	2.70	0.4309
	3	0.9239	1.739	0.007	358	40.6 23 54.7	16 53.7	1 7.6	1.05393	1.30769	2.56	0.4083
h	4	0.9267	1.750	0.010	358	52.8 23 55.5	15 57.0	1 3.8	1.05585	1.30805	2.42	0.3844
(5.0)	5	0.9294	1.761	0.010	359	6.9 23 56.5	15 0.4	1 0.0	1.05846	1.30840	2.28	0.3589
	6	0.9322	+1.772	-0.008	359	19.8 23 57.3	14 3.8	0 56.3	+1.06176	+1.30872	+2.15	+0.3316
	7	0.9349	1.783	-0.003	359	28.8 23 57.9	13 7.3	0 52.5	1.06552	1.30902	2.01	0.3024
	8	0.9376	1.794	+0.002	359	32.7 23 58.2	12 10.9	0 48.7	1.06949	1.30931	1.87	0.2709
	9	0.9404	1.805	0.007	359	31.4 23 58.1	11 14.6	0 45.0	1.07337	1.30957	1.72	0.2368
	10	0.9431	1.816	0.011	359	25.6 23 57.7	10 18.2	0 41.2	1.07695	1.30981	1.58	0.1996
	11	0.9458	+1.827	+0.013	359	16.9 23 57.1	9 22.0	0 37.5	+1.08007	+1.31004	+1.44	+0.1588
	12	0.9486	1.838	0.013	359	6.6 23 56.5	8 25.8	0 33.7	1.08271	1.31024	1.30	0.1136
	13	0.9513	1.850	0.011	358	56.4 23 55.8	7 29.6	0 30.0	1.08487	1.31042	1.16	0.0630
	14	0.9541	1.861	0.007	358	47.5 23 55.2	6 33.4	0 26.2	1.08660	1.31059	1.01	0.0055
	15	0.9568	1.872	+0.001	358	41.4 23 54.8	5 37.3	0 22.5	1.08800	1.31073	0.87	9.9390
	16	0.9595	+1.884	-0.005	358	39.1 23 54.6	4 41.1	0 18.7	+1.08925	+1.31085	+0.72	+9.8603
	17	0.9623	1.895	0.010	358	41.0 23 54.7	3 45.0	0 15.0	1.09056	1.31094	0.58	9.7639
	18	0.9650	1.906	0.015	358	47.2 23 55.1	2 48.9	0 11.3	1.09216	1.31102	0.44	9.6396
	19	0.9678	1.918	0.017	358	56.3 23 55.8	1 52.8	0 7.5	1.09425	1.31107	0.29	9.4645
h	20	0.9705	1.929	0.016	359	6.6 23 56.4	0 56.8	0 3.8	1.09699	1.31111	+0.15	9.1661
(6.0)	21	0.9732	+1.941	-0.012	359	15.0 23 57.0	0 0.7	0 0.0	+1.10039	+1.31112	0.00	+7.2360
	22	0.9760	1.952	-0.006	359	19.3 23 57.3	359 4.6	23 56.3	1.10429	1.31111	-0.14	-9.1559
	23	0.9787	1.963	+0.001	359	17.6 23 57.2	358 8.5	23 52.6	1.10840	1.31108	0.29	9.4595
	24	0.9814	1.975	0.008	359	9.8 23 56.7	357 12.3	23 48.8	1.11237	1.31102	0.43	9.6363
	25	0.9842	1.986	0.012	358	57.1 23 55.8	356 16.2	23 45.1	1.11589	1.31095	0.58	9.7616
	26	0.9869	+1.997	+0.014	358	41.9 23 54.8	355 20.0	23 41.3	+1.11872	+1.31085	-0.72	-9.8585
	27	0.9896	2.008	0.012	358	27.2 23 53.8	354 23.8	23 37.6	1.12082	1.31073	0.87	9.9376
	28	0.9924	2.020	0.007	358	16.0 23 53.1	353 27.6	23 33.8	1.12231	1.31059	1.01	0.0044
	29	0.9951	2.031	+0.001	358	10.2 23 52.7	352 31.3	23 30.1	1.12348	1.31043	1.15	0.0622
	30	0.9979	2.042	-0.004	358	10.4 23 52.7	351 35.0	23 26.3	1.12467	1.31024	1.30	0.1130
	31	1.0006	+2.054	-0.008	358	15.1 23 53.0	350 38.6	23 22.6	+1.12619	+1.31004	-1.44	-0.1584
	32	1.0033	+2.066	0.010	358	22.5 23 53.5	349 42.2	23 18.8	+1.12824	+1.30982	-1.58	-0.1993

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

α Ursæ Min. (Polaris).			51 Cephei (Hrv.).			6 Ursæ Min. (B.).			δ Ursæ Min.			λ Ursæ Min.		
Mean Solar Date.	Right Ascen- sion.	Declina- tion North.	Mean Solar Date.	Right Ascen- sion.	Declina- tion North.	Mean Solar Date.	Right Ascen- sion.	Declina- tion North.	Mean Solar Date.	Right Ascen- sion.	Declina- tion North.	Mean Solar Date.	Right Ascen- sion.	Declina- tion North.
Jan.	h m 1 25	° +88 49	Jan.	h m 6 57	° +87 11	Jan.	h m 12 14	° +88 12	Jan.	h m 18 1	° +86 36	Jan.	h m 19 12	° +89 0
	s	"		s	"		s	"		s	"		s	"
0.3	76.13	9.0	0.5	57.34	38.4	0.7	23.18	22.0	0.9	40.45	50.0	1.0	27.59	13.2
1.3	75.22	9.1	1.5	57.52	38.7	1.7	23.88	21.9	1.9	40.40	49.6	2.0	27.03	12.9
2.3	74.27	9.3	2.5	57.70	39.0	2.7	24.63	21.8	2.9	40.35	49.3	3.0	26.48	12.6
3.3	73.26	9.5	3.5	57.87	39.4	3.7	25.42	21.8	3.9	40.32	48.9	4.0	25.97	12.3
4.3	72.19	9.6	4.5	58.03	39.7	4.7	26.23	21.8	4.9	40.31	48.5	5.0	25.49	11.9
5.3	71.06	9.8	5.5	58.17	40.1	5.7	27.05	21.8	5.9	40.33	48.2	6.0	25.09	11.5
6.3	69.91	9.9	6.5	58.28	40.5	6.7	27.87	21.8	6.9	40.38	47.8	7.0	24.78	11.2
7.3	68.74	10.0	7.5	58.35	40.8	7.7	28.67	21.8	7.9	40.45	47.4	7.9	24.57	10.8
8.3	67.58	10.0	8.5	58.39	41.2	8.7	29.44	21.9	8.9	40.54	47.0	8.9	24.44	10.4
9.3	66.47	10.1	9.5	58.41	41.5	9.7	30.17	21.9	9.9	40.64	46.7	9.9	24.35	10.1
10.3	65.42	10.1	10.5	58.43	41.8	10.7	30.86	22.0	10.9	40.74	46.4	10.9	24.28	9.8
11.3	64.42	10.2	11.5	58.44	42.1	11.7	31.52	22.0	11.9	40.84	46.1	11.9	24.21	9.5
12.2	63.45	10.2	12.5	58.45	42.4	12.7	32.15	22.1	12.9	40.92	45.8	12.9	24.13	9.2
13.2	62.51	10.2	13.5	58.48	42.7	13.7	32.79	22.1	13.9	41.00	45.5	13.9	24.02	8.9
14.2	61.57	10.3	14.5	58.53	43.0	14.7	33.45	22.1	14.9	41.07	45.2	14.9	23.86	8.6
15.2	60.59	10.4	15.5	58.56	43.3	15.7	34.14	22.2	15.9	41.14	44.8	15.9	23.69	8.2
16.2	59.56	10.4	16.5	58.60	43.7	16.7	34.85	22.2	16.9	41.22	44.5	16.9	23.53	7.9
17.2	58.48	10.5	17.5	58.63	44.0	17.7	35.60	22.2	17.9	41.31	44.1	17.9	23.41	7.6
18.2	57.33	10.5	18.5	58.64	44.4	18.7	36.38	22.3	18.9	41.42	43.8	18.9	23.35	7.2
19.2	56.14	10.6	19.5	58.63	44.7	19.7	37.16	22.4	19.9	41.55	43.4	19.9	23.36	6.8
20.2	54.93	10.6	20.5	58.59	45.1	20.7	37.93	22.5	20.9	41.72	43.1	20.9	23.47	6.4
21.2	53.72	10.5	21.5	58.51	45.4	21.7	38.68	22.6	21.9	41.91	42.7	21.9	23.68	6.1
22.2	52.56	10.5	22.5	58.42	45.8	22.7	39.39	22.7	22.9	42.11	42.4	22.9	23.93	5.7
23.2	51.45	10.5	23.5	58.31	46.1	23.7	40.05	22.8	23.9	42.31	42.1	23.9	24.21	5.4
24.2	50.40	10.4	24.4	58.18	46.4	24.7	40.67	23.0	24.9	42.51	41.8	24.9	24.50	5.0
25.2	49.40	10.4	25.4	58.07	46.7	25.7	41.26	23.1	25.9	42.69	41.5	25.9	24.76	4.7
26.2	48.44	10.3	26.4	57.97	47.0	26.7	41.84	23.3	26.9	42.86	41.3	26.9	24.99	4.4
27.2	47.50	10.3	27.4	57.89	47.3	27.7	42.42	23.4	27.9	43.02	41.0	27.9	25.17	4.1
28.2	46.56	10.2	28.4	57.82	47.6	28.7	43.01	23.5	28.9	43.17	40.7	28.9	25.31	3.8
29.2	45.60	10.2	29.4	57.76	47.9	29.7	43.63	23.6	29.9	43.32	40.4	29.9	25.44	3.5
30.2	44.59	10.2	30.4	57.70	48.2	30.6	44.29	23.7	30.9	43.49	40.1	30.9	25.59	3.2
31.2	43.52	10.2	31.4	57.62	48.5	31.6	44.99	23.9	31.9	43.66	39.8	31.9	25.79	2.9
32.2	42.40	10.1	32.4	57.52	48.9	32.6	45.69	24.0	32.9	43.85	39.5	32.9	26.05	2.5

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

α Ursæ Min. (Polaris).			51 Cephei (Hæv.).			6 Ursæ Min. (B.).			δ Ursæ Min.			λ Ursæ Min.		
Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.
Feb.	h m 1 25	° +88 49	Feb.	h m 6 57	° +87 11	Feb.	h m 12 14	° +88 12	Feb.	h m 18 1	° +86 36	Feb.	h m 19 12	° +88 59
	s	"		s	"		s	"		s	"		s	"
1.2	42.40	10.1	1.4	57.52	48.9	1.6	45.69	24.0	1.9	43.85	39.5	1.9	26.05	62.5
2.2	41.26	10.1	2.4	57.39	49.2	2.6	46.38	24.2	2.9	44.08	39.2	2.9	26.39	62.2
3.2	40.11	10.0	3.4	57.23	49.5	3.6	47.05	24.4	3.9	44.33	38.9	3.9	26.82	61.8
4.2	38.97	9.9	4.4	57.04	49.9	4.6	47.70	24.6	4.9	44.59	38.6	4.9	27.33	61.5
5.2	37.88	9.8	5.4	56.83	50.2	5.6	48.30	24.8	5.9	44.86	38.3	5.9	27.90	61.1
6.2	36.85	9.7	6.4	56.60	50.5	6.6	48.85	25.1	6.9	45.15	38.1	6.9	28.50	60.8
7.2	35.89	9.5	7.4	56.38	50.7	7.6	49.36	25.3	7.9	45.42	37.8	7.9	29.11	60.6
8.2	34.97	9.4	8.4	56.16	51.0	8.6	49.84	25.5	8.9	45.68	37.6	8.9	29.70	60.3
9.2	34.10	9.2	9.4	55.94	51.3	9.6	50.31	25.7	9.9	45.93	37.4	9.9	30.26	60.0
10.2	33.25	9.1	10.4	55.73	51.5	10.6	50.78	25.9	10.9	46.17	37.2	10.9	30.77	59.8
11.2	32.38	9.0	11.4	55.54	51.8	11.6	51.27	26.1	11.9	46.40	37.0	11.9	31.26	59.5
12.2	31.47	8.9	12.4	55.35	52.0	12.6	51.80	26.2	12.9	46.64	36.8	12.9	31.74	59.2
13.2	30.53	8.8	13.4	55.16	52.3	13.6	52.35	26.4	13.9	46.89	36.5	13.9	32.25	58.9
14.2	29.54	8.7	14.4	54.96	52.6	14.6	52.92	26.6	14.9	47.16	36.3	14.9	32.81	58.6
15.2	28.52	8.5	15.4	54.73	52.9	15.6	53.49	26.8	15.8	47.45	36.0	15.9	33.44	58.3
16.2	27.47	8.4	16.4	54.47	53.2	16.6	54.05	27.1	16.8	47.76	35.7	16.9	34.15	58.0
17.2	26.43	8.2	17.4	54.18	53.5	17.6	54.59	27.3	17.8	48.10	35.5	17.9	34.94	57.7
18.2	25.42	8.0	18.4	53.87	53.7	18.6	55.09	27.6	18.8	48.45	35.3	18.9	35.79	57.4
19.1	24.47	7.8	19.4	53.55	54.0	19.6	55.54	27.9	19.8	48.80	35.1	19.9	36.68	57.1
20.1	23.60	7.6	20.4	53.22	54.2	20.6	55.94	28.2	20.8	49.14	34.9	20.9	37.59	56.9
21.1	22.79	7.4	21.4	52.88	54.4	21.6	56.31	28.5	21.8	49.47	34.8	21.9	38.49	56.7
22.1	22.04	7.2	22.4	52.56	54.6	22.6	56.64	28.7	22.8	49.79	34.7	22.9	39.34	56.4
23.1	21.33	7.0	23.4	52.26	54.8	23.6	56.96	29.0	23.8	50.09	34.5	23.9	40.13	56.2
24.1	20.64	6.8	24.4	51.97	55.0	24.6	57.29	29.2	24.8	50.37	34.4	24.9	40.88	56.0
25.1	19.93	6.6	25.4	51.70	55.2	25.6	57.64	29.5	25.8	50.66	34.2	25.9	41.60	55.8
26.1	19.19	6.4	26.4	51.44	55.4	26.6	58.01	29.7	26.8	50.94	34.1	26.9	42.32	55.6
27.1	18.42	6.2	27.4	51.17	55.6	27.6	58.40	30.0	27.8	51.23	33.9	27.9	43.06	55.4
28.1	17.60	6.0	28.4	50.89	55.9	28.6	58.81	30.2	28.8	51.55	33.7	28.9	43.84	55.1
29.1	16.75	5.8	29.3	50.58	56.1	29.6	59.22	30.5	29.8	51.88	33.5	29.9	44.70	54.8
30.1	15.89	5.6	30.3	50.24	56.4	30.6	59.63	30.8	30.8	52.23	33.4	30.9	45.64	54.6

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	γ Cephei (Hev.).		Mean Solar Date.	6 Ursæ Min. (B.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Mar.	h m 1 25	° ' +88 48	Mar.	h m 6 57	° ' +87 11	Mar.	h m 12 14	° ' +88 12	Mar.	h m 18 1	° ' +86 36	Mar.	h m 19 12	° ' +88 59
	s	"		s	"		s	"		s	"		s	"
1.1	15.89	65.6	1.3	50.24	56.4	1.6	59.63	30.8	1.8	52.23	33.4	1.9	45.64	54.6
2.1	15.06	65.4	2.3	49.87	56.6	2.6	60.01	31.1	2.8	52.61	33.2	2.9	46.66	54.3
3.1	14.27	65.1	3.3	49.49	56.8	3.6	60.33	31.5	3.8	52.98	33.1	3.8	47.74	54.1
4.1	13.54	64.8	4.3	49.09	57.0	4.6	60.59	31.8	4.8	53.37	33.0	4.8	48.85	53.9
5.1	12.89	64.6	5.3	48.68	57.2	5.6	60.81	32.1	5.8	53.75	32.9	5.8	49.96	53.7
6.1	12.31	64.3	6.3	48.29	57.3	6.6	60.99	32.4	6.8	54.11	32.8	6.8	51.05	53.6
7.1	11.78	64.0	7.3	47.90	57.4	7.6	61.15	32.7	7.8	54.45	32.8	7.8	52.10	53.4
8.1	11.28	63.8	8.3	47.53	57.6	8.6	61.30	33.0	8.8	54.78	32.7	8.8	53.11	53.3
9.1	10.78	63.5	9.3	47.17	57.7	9.5	61.46	33.3	9.8	55.12	32.7	9.8	54.07	53.1
10.1	10.27	63.3	10.3	46.82	57.8	10.5	61.65	33.6	10.8	55.44	32.6	10.8	55.01	53.0
11.1	9.73	63.0	11.3	46.49	57.9	11.5	61.86	33.8	11.8	55.77	32.5	11.8	55.96	52.8
12.1	9.15	62.8	12.3	46.14	58.1	12.5	62.09	34.1	12.8	56.11	32.5	12.8	56.94	52.7
13.1	8.53	62.5	13.3	45.77	58.3	13.5	62.33	34.4	13.8	56.46	32.4	13.8	57.97	52.5
14.1	7.89	62.3	14.3	45.39	58.4	14.5	62.56	34.7	14.8	56.84	32.3	14.8	59.06	52.3
15.1	7.26	62.0	15.3	44.98	58.6	15.5	62.77	35.0	15.8	57.23	32.2	15.8	60.22	52.1
16.1	6.65	61.7	16.3	44.54	58.7	16.5	62.96	35.4	16.8	57.63	32.1	16.8	61.45	52.0
17.1	6.11	61.4	17.3	44.09	58.8	17.5	63.09	35.7	17.8	58.04	32.1	17.8	62.71	51.8
18.1	5.64	61.0	18.3	43.64	58.9	18.5	63.17	36.0	18.8	58.44	32.1	18.8	63.99	51.7
19.1	5.25	60.7	19.3	43.18	59.0	19.5	63.19	36.4	19.8	58.83	32.1	19.8	65.26	51.6
20.1	4.92	60.4	20.3	42.73	59.1	20.5	63.18	36.7	20.8	59.20	32.1	20.8	66.47	51.6
21.1	4.65	60.1	21.3	42.31	59.1	21.5	63.16	37.0	21.8	59.56	32.2	21.8	67.63	51.5
22.1	4.42	59.8	22.3	41.92	59.2	22.5	63.14	37.3	22.8	59.90	32.2	22.8	68.73	51.4
23.1	4.20	59.5	23.3	41.54	59.2	23.5	63.13	37.6	23.7	60.23	32.2	23.8	69.78	51.4
24.1	3.95	59.3	24.3	41.18	59.2	24.5	63.13	37.9	24.7	60.55	32.2	24.8	70.79	51.3
25.1	3.67	59.0	25.3	40.81	59.3	25.5	63.16	38.2	25.7	60.86	32.2	25.8	71.80	51.2
26.0	3.34	58.7	26.3	40.43	59.4	26.5	63.22	38.5	26.7	61.19	32.2	26.8	72.84	51.1
27.0	2.99	58.5	27.3	40.05	59.5	27.5	63.28	38.8	27.7	61.54	32.2	27.8	73.93	51.0
28.0	2.63	58.2	28.3	39.65	59.6	28.5	63.32	39.1	28.7	61.90	32.2	28.8	75.09	50.9
29.0	2.27	57.9	29.3	39.22	59.6	29.5	63.34	39.5	29.7	62.27	32.2	29.8	76.31	50.8
30.0	1.96	57.6	30.3	38.77	59.7	30.5	63.32	39.8	30.7	62.66	32.3	30.8	77.59	50.8
31.0	1.72	57.2	31.3	38.31	59.7	31.5	63.25	40.2	31.7	63.04	32.3	31.8	78.90	50.7
32.0	1.54	56.9	32.3	37.84	59.7	32.5	63.13	40.5	32.7	63.43	32.4	32.8	80.21	50.7

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	γ Cephei (Hæv.).		Mean Solar Date.	6 Ursæ Min. (B.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Apr.	h m 1 25	° +88 48	Apr.	h m 6 57	° +87 11	Apr.	h m 12 14	° +88 12	Apr.	h m 18 2	° +86 36	Apr.	h m 19 13	° +88 59
	s	"		s	"		s	"		s	"		s	"
1.0	1.54	56.9	1.3	37.84	59.7	1.5	63.13	40.5	1.7	3.43	32.4	1.8	20.21	50.7
2.0	1.44	56.6	2.3	37.39	59.7	2.5	62.97	40.9	2.7	3.80	32.5	2.8	21.50	50.7
3.0	1.40	56.2	3.3	36.95	59.7	3.5	62.77	41.2	3.7	4.15	32.6	3.8	22.74	50.7
4.0	1.41	55.9	4.3	36.52	59.6	4.5	62.56	41.5	4.7	4.47	32.8	4.8	23.95	50.7
5.0	1.45	55.6	5.3	36.11	59.6	5.5	62.36	41.8	5.7	4.79	32.9	5.8	25.08	50.7
6.0	1.47	55.3	6.3	35.72	59.6	6.5	62.17	42.0	6.7	5.09	33.0	6.8	26.16	50.8
7.0	1.48	55.0	7.2	35.34	59.5	7.5	62.00	42.3	7.7	5.40	33.1	7.8	27.23	50.8
8.0	1.45	54.8	8.2	34.97	59.5	8.5	61.86	42.5	8.7	5.72	33.2	8.8	28.30	50.8
9.0	1.38	54.5	9.2	34.58	59.5	9.5	61.74	42.8	9.7	6.04	33.2	9.8	29.41	50.8
10.0	1.28	54.2	10.2	34.19	59.5	10.5	61.62	43.1	10.7	6.38	33.3	10.7	30.58	50.8
11.0	1.17	53.9	11.2	33.78	59.5	11.5	61.49	43.4	11.7	6.73	33.4	11.7	31.79	50.8
12.0	1.09	53.6	12.2	33.34	59.5	12.5	61.34	43.7	12.7	7.09	33.5	12.7	33.06	50.8
12.9	1.06	53.2	13.2	32.88	59.5	13.5	61.13	44.0	13.7	7.45	33.6	13.7	34.37	50.8
13.9	1.10	52.9	14.2	32.43	59.4	14.5	60.87	44.3	14.7	7.81	33.8	14.7	35.69	50.8
14.9	1.21	52.5	15.2	31.98	59.3	15.4	60.56	44.6	15.7	8.16	34.0	15.7	36.98	50.9
15.9	1.41	52.2	16.2	31.54	59.2	16.4	60.22	44.9	16.7	8.49	34.1	16.7	38.23	51.0
16.9	1.66	51.9	17.2	31.12	59.1	17.4	59.86	45.2	17.7	8.80	34.3	17.7	39.42	51.1
17.9	1.96	51.6	18.2	30.73	59.0	18.4	59.49	45.5	18.7	9.08	34.5	18.7	40.54	51.2
18.9	2.27	51.3	19.2	30.37	58.9	19.4	59.13	45.7	19.7	9.34	34.7	19.7	41.58	51.3
19.9	2.57	51.0	20.2	30.02	58.8	20.4	58.79	46.0	20.7	9.59	34.9	20.7	42.56	51.4
20.9	2.84	50.7	21.2	29.69	58.7	21.4	58.49	46.2	21.7	9.83	35.1	21.7	43.52	51.5
21.9	3.07	50.5	22.2	29.37	58.6	22.4	58.21	46.4	22.7	10.09	35.2	22.7	44.49	51.5
22.9	3.27	50.2	23.2	29.03	58.5	23.4	57.93	46.7	23.7	10.35	35.4	23.7	45.48	51.6
23.9	3.44	50.0	24.2	28.68	58.4	24.4	57.65	46.9	24.7	10.63	35.5	24.7	46.53	51.7
24.9	3.62	49.7	25.2	28.31	58.3	25.4	57.36	47.2	25.7	10.92	35.7	25.7	47.64	51.7
25.9	3.82	49.4	26.2	27.92	58.2	26.4	57.04	47.5	26.7	11.22	35.9	26.7	48.79	51.8
26.9	4.07	49.1	27.2	27.52	58.1	27.4	56.67	47.8	27.7	11.52	36.1	27.7	49.97	51.9
27.9	4.39	48.8	28.2	27.11	58.0	28.4	56.25	48.0	28.7	11.81	36.3	28.7	51.16	52.1
28.9	4.79	48.5	29.2	26.71	57.8	29.4	55.78	48.3	29.6	12.10	36.5	29.7	52.33	52.2
29.9	5.26	48.2	30.2	26.33	57.7	30.4	55.29	48.6	30.6	12.36	36.8	30.7	53.44	52.4
30.9	5.78	47.9	31.2	25.98	57.5	31.4	54.79	48.8	31.6	12.59	37.1	31.7	54.49	52.6
31.9	6.32	47.6	32.2	25.64	57.3	32.4	54.28	49.0	32.6	12.81	37.3	32.7	55.47	52.8

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	γ Cephei (Hev.).		Mean Solar Date.	ϵ Ursæ Min. (B.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
May	h m 1 25	° +88 48	May	h m 6 57	° +87 11	May	h m 12 14	° +88 12	May	h m 18 2	° +86 36	May	h m 19 13	° +88 59
	s	"		s	"		s	"		s	"		s	"
1.9	6.32	47.6	1.2	25.98	57.5	1.4	54.79	48.8	1.6	12.59	37.1	1.7	54.49	52.6
2.9	6.87	47.3	2.2	25.64	57.3	2.4	54.28	49.0	2.6	12.81	37.3	2.7	55.47	52.8
3.9	7.40	47.1	3.2	25.33	57.1	3.4	53.78	49.2	3.6	13.01	37.6	3.7	56.38	52.9
4.9	7.90	46.9	4.2	25.03	56.9	4.4	53.31	49.3	4.6	13.21	37.8	4.7	57.25	53.1
5.9	8.35	46.6	5.2	24.75	56.7	5.4	52.88	49.5	5.6	13.41	38.0	5.7	58.12	53.3
6.9	8.77	46.4	6.2	24.47	56.5	6.4	52.47	49.7	6.6	13.61	38.2	6.7	59.00	53.4
7.9	9.17	46.2	7.2	24.17	56.4	7.4	52.07	49.9	7.6	13.83	38.4	7.7	59.91	53.6
8.9	9.58	45.9	8.2	23.86	56.3	8.4	51.66	50.1	8.6	14.06	38.6	8.7	60.86	53.7
9.9	10.02	45.7	9.2	23.54	56.1	9.4	51.24	50.3	9.6	14.29	38.8	9.7	61.86	53.9
10.9	10.51	45.4	10.2	23.21	55.9	10.4	50.79	50.5	10.6	14.54	39.1	10.7	62.90	54.0
11.9	11.07	45.1	11.2	22.86	55.8	11.4	50.28	50.7	11.6	14.78	39.3	11.7	63.94	54.2
12.9	11.71	44.8	12.2	22.52	55.6	12.4	49.73	50.9	12.6	15.00	39.6	12.7	64.96	54.4
13.9	12.41	44.6	13.1	22.19	55.3	13.4	49.14	51.1	13.6	15.20	39.9	13.7	65.95	54.6
14.9	13.16	44.3	14.1	21.89	55.1	14.4	48.53	51.3	14.6	15.39	40.3	14.7	66.86	54.8
15.9	13.94	44.1	15.1	21.62	54.8	15.4	47.92	51.4	15.6	15.55	40.6	15.7	67.68	55.1
16.9	14.71	43.9	16.1	21.38	54.6	16.4	47.31	51.6	16.6	15.68	40.9	16.7	68.43	55.3
17.9	15.45	43.7	17.1	21.16	54.3	17.4	46.72	51.7	17.6	15.79	41.1	17.6	69.11	55.6
18.9	16.15	43.6	18.1	20.97	54.1	18.4	46.16	51.8	18.6	15.90	41.4	18.6	69.74	55.8
19.9	16.80	43.4	19.1	20.78	53.9	19.4	45.64	51.9	19.6	16.00	41.7	19.6	70.35	56.0
20.9	17.42	43.2	20.1	20.59	53.6	20.4	45.13	52.0	20.6	16.11	41.9	20.6	70.98	56.2
21.9	18.03	43.0	21.1	20.39	53.4	21.3	44.64	52.2	21.6	16.24	42.2	21.6	71.64	56.4
22.9	18.66	42.8	22.1	20.18	53.2	22.3	44.14	52.3	22.6	16.38	42.4	22.6	72.34	56.6
23.9	19.32	42.6	23.1	19.95	53.0	23.3	43.63	52.5	23.6	16.52	42.7	23.6	73.09	56.8
24.9	20.04	42.4	24.1	19.71	52.8	24.3	43.08	52.6	24.6	16.67	43.0	24.6	73.87	57.0
25.9	20.83	42.2	25.1	19.47	52.6	25.3	42.48	52.8	25.6	16.81	43.3	25.6	74.67	57.3
26.9	21.68	42.0	26.1	19.23	52.3	26.3	41.84	52.9	26.6	16.94	43.6	26.6	75.44	57.5
27.9	22.58	41.8	27.1	19.01	52.0	27.3	41.17	53.0	27.6	17.06	43.9	27.6	76.16	57.8
28.9	23.51	41.6	28.1	18.81	51.7	28.3	40.48	53.1	28.6	17.15	44.2	28.6	76.82	58.1
29.9	24.45	41.5	29.1	18.63	51.4	29.3	39.79	53.2	29.6	17.22	44.6	29.6	77.40	58.4
30.9	25.37	41.3	30.1	18.47	51.1	30.3	39.12	53.3	30.6	17.27	44.9	30.6	77.91	58.7
31.9	26.26	41.2	31.1	18.34	50.8	31.3	38.48	53.3	31.6	17.31	45.2	31.6	78.35	59.0
32.9	27.10	41.1	32.1	18.23	50.6	32.3	37.87	53.3	32.6	17.33	45.5	32.6	78.76	59.3

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	51 Cephei (Hev.).		Mean Solar Date.	6-Ursæ Min. (B.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
June	h m 1 25	° +88 48	June	h m 6 57	° +87 11	June	h m 12 14	° +88 12	June	h m 18 2	° +86 36	June	h m 19 14	° +88 59
	s	"		s	"		s	"		s	"		s	"
1.9	27.10	41.1	1.1	18.23	50.6	1.3	37.87	53.3	1.6	17.33	45.5	1.6	18.76	59.3
2.9	27.89	41.0	2.1	18.13	50.3	2.3	37.30	53.4	2.6	17.37	45.8	2.6	19.17	59.6
3.9	28.64	40.8	3.1	18.02	50.1	3.3	36.74	53.4	3.6	17.41	46.1	3.6	19.60	59.8
4.9	29.38	40.7	4.1	17.89	49.8	4.3	36.19	53.4	4.6	17.46	46.3	4.6	20.06	60.0
5.9	30.15	40.6	5.1	17.75	49.6	5.3	35.63	53.5	5.5	17.54	46.6	5.6	20.57	60.3
6.9	30.96	40.4	6.1	17.59	49.3	6.3	35.06	53.6	6.5	17.61	46.9	6.6	21.12	60.5
7.8	31.83	40.3	7.1	17.43	49.1	7.3	34.45	53.6	7.5	17.68	47.2	7.6	21.69	60.8
8.8	32.77	40.1	8.1	17.28	48.8	8.3	33.79	53.7	8.5	17.75	47.5	8.6	22.24	61.1
9.8	33.77	40.0	9.1	17.14	48.5	9.3	33.10	53.7	9.5	17.79	47.9	9.6	22.74	61.4
10.8	34.81	39.9	10.1	17.02	48.2	10.3	32.38	53.8	10.5	17.81	48.2	10.6	23.19	61.7
11.8	35.88	39.8	11.1	16.92	47.8	11.3	31.65	53.8	11.5	17.80	48.6	11.6	23.56	62.0
12.8	36.95	39.7	12.1	16.86	47.5	12.3	30.93	53.8	12.5	17.77	48.9	12.6	23.83	62.4
13.8	37.99	39.6	13.1	16.83	47.2	13.3	30.24	53.7	13.5	17.72	49.3	13.6	24.02	62.7
14.8	38.98	39.6	14.1	16.81	46.9	14.3	29.57	53.7	14.5	17.65	49.6	14.6	24.15	63.0
15.8	39.93	39.6	15.1	16.82	46.6	15.3	28.94	53.7	15.5	17.59	49.9	15.6	24.25	63.3
16.8	40.83	39.5	16.1	16.83	46.3	16.3	28.36	53.6	16.5	17.52	50.1	16.6	24.35	63.6
17.8	41.70	39.5	17.1	16.84	46.0	17.3	27.79	53.6	17.5	17.46	50.4	17.6	24.46	63.9
18.8	42.56	39.4	18.0	16.83	45.8	18.3	27.22	53.6	18.5	17.42	50.7	18.6	24.61	64.2
19.8	43.44	39.4	19.0	16.81	45.5	19.3	26.64	53.6	19.5	17.39	51.0	19.6	24.81	64.4
20.8	44.37	39.3	20.0	16.78	45.2	20.3	26.04	53.6	20.5	17.35	51.3	20.6	25.03	64.7
21.8	45.35	39.2	21.0	16.72	44.9	21.3	25.40	53.6	21.5	17.33	51.6	21.6	25.28	65.0
22.8	46.40	39.1	22.0	16.68	44.6	22.3	24.73	53.5	22.5	17.30	51.9	22.6	25.52	65.3
23.8	47.49	39.1	23.0	16.65	44.3	23.3	24.03	53.5	23.5	17.24	52.3	23.5	25.72	65.7
24.8	48.62	39.0	24.0	16.65	44.0	24.3	23.31	53.5	24.5	17.16	52.6	24.5	25.85	66.0
25.8	49.77	39.0	25.0	16.67	43.6	25.3	22.59	53.4	25.5	17.06	53.0	25.5	25.90	66.4
26.8	50.89	39.0	26.0	16.71	43.3	26.3	21.88	53.3	26.5	16.94	53.3	26.5	25.87	66.7
27.8	51.97	39.1	27.0	16.78	42.9	27.2	21.19	53.2	27.5	16.80	53.6	27.5	25.77	67.1
28.8	53.01	39.1	28.0	16.87	42.6	28.2	20.55	53.1	28.5	16.65	53.9	28.5	25.62	67.4
29.8	53.99	39.1	29.0	16.97	42.3	29.2	19.94	52.9	29.5	16.51	54.2	29.5	25.46	67.7
30.8	54.93	39.1	30.0	17.08	42.0	30.2	19.37	52.8	30.5	16.37	54.5	30.5	25.31	68.0
31.8	55.83	39.2	31.0	17.16	41.8	31.2	18.82	52.7	31.5	16.25	54.7	31.5	25.20	68.3

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	51 Cephei (Hev.).		Mean Solar Date.	6 Ursæ Min. (B.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
July	h m 1 25	° +88 48	July	h m 6 57	° +87 11	July	h m 12 14	° +88 12	July	h m 18 2	° +86 36	July	h m 19 14	° +89 0
	s "	"		s "	"		s "	"		s "	"		s "	"
1.8	55.83	39.2	1.0	17.16	41.8	1.2	18.82	52.7	1.5	16.25	54.7	1.5	25.20	8.3
2.8	56.73	39.2	2.0	17.25	41.5	2.2	18.27	52.6	2.5	16.14	55.0	2.5	25.11	8.6
3.8	57.66	39.2	3.0	17.32	41.2	3.2	17.71	52.5	3.5	16.04	55.3	3.5	25.07	8.9
4.8	58.63	39.2	4.0	17.37	40.9	4.2	17.12	52.4	4.5	15.94	55.6	4.5	25.06	9.2
5.8	59.66	39.2	4.9	17.41	40.6	5.2	16.50	52.3	5.5	15.83	55.9	5.5	25.05	9.5
6.8	60.75	39.2	5.9	17.46	40.3	6.2	15.84	52.2	6.5	15.71	56.2	6.5	25.00	9.8
7.8	61.88	39.2	6.9	17.54	40.0	7.2	15.16	52.1	7.5	15.57	56.5	7.5	24.90	10.2
8.8	63.04	39.2	7.9	17.64	39.7	8.2	14.46	52.0	8.5	15.40	56.8	8.5	24.73	10.5
9.8	64.21	39.3	8.9	17.77	39.3	9.2	13.77	51.8	9.5	15.21	57.1	9.5	24.47	10.9
10.8	65.36	39.4	9.9	17.94	39.0	10.2	13.11	51.7	10.5	15.00	57.5	10.5	24.11	11.2
11.8	66.46	39.5	10.9	18.13	38.6	11.2	12.48	51.5	11.5	14.76	57.8	11.5	23.68	11.6
12.8	67.50	39.6	11.9	18.33	38.3	12.2	11.88	51.3	12.4	14.52	58.0	12.5	23.20	11.9
13.8	68.49	39.7	12.9	18.55	38.0	13.2	11.33	51.1	13.4	14.29	58.3	13.5	22.71	12.2
14.8	69.44	39.8	13.9	18.76	37.8	14.2	10.81	50.9	14.4	14.07	58.5	14.5	22.23	12.5
15.7	70.35	39.9	14.9	18.96	37.5	15.2	10.30	50.8	15.4	13.85	58.8	15.5	21.79	12.8
16.7	71.27	40.0	15.9	19.14	37.3	16.2	9.80	50.6	16.4	13.65	59.0	16.5	21.39	13.0
17.7	72.22	40.1	16.9	19.30	37.0	17.2	9.28	50.4	17.4	13.47	59.2	17.5	21.04	13.3
18.7	73.20	40.2	17.9	19.47	36.7	18.2	8.73	50.3	18.4	13.28	59.5	18.5	20.70	13.6
19.7	74.25	40.2	18.9	19.63	36.4	19.2	8.15	50.1	19.4	13.08	59.8	19.5	20.36	13.9
20.7	75.36	40.3	19.9	19.80	36.1	20.2	7.54	50.0	20.4	12.87	60.1	20.5	20.00	14.2
21.7	76.49	40.4	20.9	19.99	35.8	21.2	6.91	49.8	21.4	12.64	60.4	21.5	19.59	14.6
22.7	77.63	40.5	21.9	20.20	35.5	22.2	6.28	49.6	22.4	12.38	60.7	22.5	19.11	14.9
23.7	78.76	40.7	22.9	20.44	35.1	23.2	5.65	49.4	23.4	12.11	60.9	23.5	18.53	15.3
24.7	79.85	40.8	23.9	20.69	34.8	24.2	5.05	49.1	24.4	11.82	61.2	24.5	17.87	15.6
25.7	80.89	41.0	24.9	20.97	34.5	25.2	4.49	48.8	25.4	11.52	61.5	25.5	17.18	15.9
26.7	81.87	41.2	25.9	21.28	34.2	26.2	3.98	48.6	26.4	11.22	61.7	26.5	16.46	16.2
27.7	82.79	41.4	26.9	21.58	33.9	27.2	3.51	48.3	27.4	10.93	61.9	27.5	15.74	16.5
28.7	83.66	41.5	27.9	21.87	33.7	28.2	3.07	48.1	28.4	10.64	62.1	28.5	15.04	16.8
29.7	84.51	41.7	28.9	22.15	33.5	29.2	2.64	47.8	29.4	10.38	62.3	29.5	14.38	17.1
30.7	85.38	41.8	29.9	22.41	33.2	30.2	2.21	47.6	30.4	10.13	62.5	30.4	13.77	17.3
31.7	86.29	42.0	30.9	22.66	33.0	31.2	1.77	47.4	31.4	9.88	62.7	31.4	13.20	17.6
32.7	87.24	42.1	31.9	22.90	32.7	32.1	1.30	47.1	32.4	9.63	62.9	32.4	12.64	17.9

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	γ Cephei (Hæv.).		Mean Solar Date.	6 Ursæ Min. (B.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Aug.	h m 1 26	° ' 48	Aug.	h m 6 57	° ' 11	Aug.	h m 12 13	° ' 12	Aug.	h m 18 1	° ' 37	Aug.	h m 19 13	° ' 89
	s	"		s	"		s	"		s	"		s	"
1.7	27.24	42.1	1.9	23.14	32.4	1.1	61.30	47.1	1.4	69.63	2.9	1.4	72.64	17.9
2.7	28.24	42.2	2.9	23.39	32.2	2.1	60.79	46.9	2.4	69.38	3.2	2.4	72.06	18.2
3.7	29.29	42.4	3.9	23.67	31.9	3.1	60.26	46.7	3.4	69.10	3.4	3.4	71.44	18.5
4.7	30.37	42.6	4.9	23.97	31.6	4.1	59.70	46.4	4.4	68.80	3.7	4.4	70.75	18.8
5.7	31.45	42.8	5.9	24.29	31.3	5.1	59.15	46.2	5.4	68.48	3.9	5.4	69.99	19.1
6.7	32.51	43.0	6.9	24.66	31.0	6.1	58.62	45.9	6.4	68.14	4.2	6.4	69.13	19.4
7.7	33.54	43.2	7.9	25.04	30.7	7.1	58.13	45.6	7.4	67.78	4.4	7.4	68.19	19.7
8.7	34.50	43.5	8.9	25.44	30.4	8.1	57.67	45.2	8.4	67.40	4.6	8.4	67.21	20.0
9.7	35.39	43.7	9.9	25.83	30.2	9.1	57.25	44.9	9.4	67.03	4.8	9.4	66.20	20.3
10.7	36.23	44.0	10.9	26.21	30.0	10.1	56.89	44.6	10.4	66.67	4.9	10.4	65.19	20.6
11.7	37.03	44.2	11.9	26.58	29.8	11.1	56.55	44.3	11.4	66.32	5.1	11.4	64.21	20.8
12.7	37.82	44.5	12.9	26.93	29.6	12.1	56.22	44.0	12.4	65.98	5.2	12.4	63.28	21.0
13.7	38.62	44.7	13.9	27.27	29.4	13.1	55.88	43.8	13.4	65.65	5.4	13.4	62.39	21.3
14.7	39.45	44.9	14.9	27.60	29.1	14.1	55.52	43.5	14.4	65.33	5.5	14.4	61.53	21.5
15.7	40.32	45.1	15.9	27.93	28.9	15.1	55.13	43.2	15.4	65.02	5.7	15.4	60.69	21.7
16.7	41.24	45.3	16.9	28.27	28.6	16.1	54.72	42.9	16.4	64.69	5.9	16.4	59.85	22.0
17.7	42.20	45.5	17.9	28.63	28.4	17.1	54.29	42.7	17.3	64.35	6.1	17.4	58.95	22.3
18.7	43.18	45.8	18.9	29.02	28.1	18.1	53.84	42.4	18.3	63.99	6.3	18.4	57.99	22.6
19.6	44.15	46.0	19.9	29.44	27.8	19.1	53.38	42.0	19.3	63.61	6.5	19.4	56.96	22.9
20.6	45.09	46.3	20.9	29.88	27.6	20.1	52.96	41.7	20.3	63.21	6.7	20.4	55.86	23.1
21.6	45.98	46.6	21.9	30.33	27.4	21.1	52.59	41.3	21.3	62.80	6.8	21.4	54.69	23.4
22.6	46.80	46.9	22.9	30.79	27.2	22.1	52.26	41.0	22.3	62.38	7.0	22.4	53.49	23.7
23.6	47.55	47.2	23.9	31.24	27.0	23.1	51.97	40.6	23.3	61.97	7.1	23.4	52.30	23.9
24.6	48.25	47.5	24.9	31.67	26.8	24.1	51.72	40.2	24.3	61.58	7.2	24.4	51.12	24.1
25.6	48.91	47.8	25.9	32.08	26.6	25.1	51.50	39.9	25.3	61.20	7.3	25.4	49.98	24.3
26.6	49.57	48.1	26.9	32.48	26.5	26.1	51.28	39.6	26.3	60.83	7.4	26.4	48.89	24.5
27.6	50.24	48.3	27.9	32.87	26.3	27.1	51.06	39.2	27.3	60.48	7.5	27.4	47.85	24.7
28.6	50.94	48.6	28.9	33.26	26.1	28.1	50.81	38.9	28.3	60.14	7.6	28.4	46.84	24.9
29.6	51.69	48.8	29.9	33.64	25.9	29.1	50.52	38.6	29.3	59.78	7.7	29.4	45.82	25.1
30.6	52.49	49.1	30.8	34.04	25.7	30.1	50.22	38.3	30.3	59.42	7.8	30.4	44.77	25.3
31.6	53.32	49.4	31.8	34.47	25.5	31.1	49.90	37.9	31.3	59.04	8.0	31.4	43.69	25.5
32.6	54.17	49.7	32.8	34.92	25.3	32.1	49.58	37.6	32.3	58.64	8.1	32.4	42.54	25.8

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	<i>α</i> Ursæ Min. (<i>Polaris</i>).		Mean Solar Date.	51 Cephei (Hrv.).		Mean Solar Date.	6 Ursæ Min. (B.).		Mean Solar Date.	<i>δ</i> Ursæ Min.		Mean Solar Date.	<i>ζ</i> Ursæ Min.	
	Right Ascension.	Declina- tion <i>North</i> .		Right Ascension.	Declina- tion <i>North</i> .		Right Ascension.	Declina- tion <i>North</i> .		Right Ascension.	Declina- tion <i>North</i> .		Right Ascension.	Declina- tion <i>North</i> .
Sept.	h m 1 26	° ' " +88 48	Sept.	h m 6 57	° ' " +87 11	Sept.	h m 12 13	° ' " +88 12	Sept.	h m 18 1	° ' " +86 37	Sept.	h m 19 12	° ' " +89 0
	s	"		s	"		s	"		s	"		s	"
1.6	54.17	49.7	1.8	34.92	25.3	1.1	49.58	37.6	1.3	58.64	8.1	1.4	102.54	25.8
2.6	55.00	50.0	2.8	35.42	25.1	2.1	49.27	37.2	2.3	58.22	8.3	2.4	101.31	26.0
3.6	55.78	50.3	3.8	35.92	24.9	3.1	48.99	36.8	3.3	57.78	8.4	3.4	99.98	26.3
4.6	56.51	50.7	4.8	36.44	24.7	4.1	48.74	36.4	4.3	57.32	8.5	4.4	98.59	26.5
5.6	57.17	51.0	5.8	36.97	24.6	5.1	48.54	36.0	5.3	56.86	8.6	5.3	97.19	26.7
6.6	57.77	51.4	6.8	37.48	24.5	6.0	48.39	35.6	6.3	56.42	8.6	6.3	95.79	26.8
7.6	58.32	51.7	7.8	37.98	24.3	7.0	48.27	35.3	7.3	55.98	8.6	7.3	94.41	27.0
8.6	58.84	52.1	8.8	38.46	24.2	8.0	48.17	34.9	8.3	55.56	8.7	8.3	93.08	27.1
9.6	59.35	52.4	9.8	38.93	24.1	9.0	48.08	34.5	9.3	55.16	8.7	9.3	91.80	27.3
10.6	59.88	52.7	10.8	39.38	24.0	10.0	47.98	34.2	10.3	54.76	8.7	10.3	90.56	27.4
11.6	60.45	53.0	11.8	39.82	23.8	11.0	47.85	33.9	11.3	54.37	8.8	11.3	89.34	27.6
12.6	61.07	53.3	12.8	40.28	23.7	12.0	47.70	33.5	12.3	53.99	8.8	12.3	88.13	27.7
13.6	61.73	53.6	13.8	40.75	23.5	13.0	47.51	33.2	13.3	53.59	8.9	13.3	86.90	27.9
14.6	62.42	53.9	14.8	41.24	23.4	14.0	47.31	32.9	14.3	53.18	9.0	14.3	85.62	28.1
15.6	63.09	54.3	15.8	41.75	23.2	15.0	47.12	32.5	15.3	52.74	9.0	15.3	84.27	28.2
16.6	63.74	54.6	16.8	42.27	23.0	16.0	46.94	32.1	16.3	52.29	9.1	16.3	82.86	28.4
17.6	64.33	55.0	17.8	42.82	22.9	17.0	46.80	31.7	17.3	51.82	9.2	17.3	81.40	28.6
18.6	64.86	55.4	18.8	43.38	22.8	18.0	46.71	31.2	18.3	51.35	9.2	18.3	79.89	28.8
19.6	65.32	55.8	19.8	43.93	22.7	19.0	46.67	30.8	19.3	50.89	9.2	19.3	78.37	28.9
20.6	65.72	56.2	20.8	44.46	22.7	20.0	46.68	30.4	20.3	50.45	9.2	20.3	76.88	29.0
21.6	66.07	56.5	21.8	44.98	22.6	21.0	46.71	30.0	21.3	50.01	9.1	21.3	75.43	29.1
22.6	66.39	56.9	22.8	45.48	22.6	22.0	46.76	29.6	22.3	49.59	9.1	22.3	74.03	29.2
23.6	66.72	57.2	23.8	45.96	22.5	23.0	46.81	29.2	23.2	49.20	9.0	23.3	72.69	29.2
24.6	67.07	57.6	24.8	46.43	22.4	24.0	46.84	28.9	24.2	48.81	9.0	24.3	71.39	29.3
25.5	67.46	57.9	25.8	46.89	22.4	25.0	46.83	28.5	25.2	48.43	9.0	25.3	70.11	29.4
26.5	67.89	58.2	26.8	47.36	22.3	26.0	46.80	28.2	26.2	48.03	9.0	26.3	68.83	29.5
27.5	68.35	58.6	27.8	47.86	22.2	26.9	46.76	27.8	27.2	47.63	9.0	27.3	67.50	29.6
28.5	68.83	58.9	28.8	48.37	22.1	27.9	46.69	27.4	28.2	47.21	9.0	28.3	66.12	29.8
29.5	69.30	59.3	29.8	48.91	22.0	28.9	46.64	27.0	29.2	46.77	9.0	29.3	64.68	29.9
30.5	69.75	59.7	30.8	49.48	21.9	29.9	46.62	26.6	30.2	46.31	9.0	30.3	63.16	30.0
31.5	70.15	60.1	31.8	50.06	21.8	30.9	46.65	26.2	31.2	45.84	9.0	31.3	61.58	30.1
32.5	70.47	60.5	32.8	50.64	21.8	31.9	46.72	25.8	32.2	45.36	8.9	32.3	59.96	30.2

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

α Ursæ Min. (Polaris).			51 Cephei (Hev.).			6 Ursæ Min. (B.).			δ Ursæ Min.			λ Ursæ Min.		
Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.
Oct.	h m	°	Oct.	h m	°	Oct.	h m	°	Oct.	h m	°	Oct.	h m	°
	1 27	+88 49		6 57	+87 11		12 13	+88 12		18 1	+86 37		19 12	+89 0
	s	"		s	"		s	"		s	"		s	"
1.5	10.15	0.1	1.8	50.06	21.8	1.9	46.72	25.8	1.2	45.84	9.0	1.3	61.58	30.1
2.5	10.47	0.5	2.8	50.64	21.8	2.9	46.82	25.3	2.2	45.36	8.9	2.3	59.96	30.2
3.5	10.72	0.9	3.8	51.22	21.8	3.9	46.97	24.9	3.2	44.89	8.8	3.3	58.34	30.2
4.5	10.91	1.4	4.8	51.79	21.8	4.9	47.15	24.5	4.2	44.43	8.7	4.3	56.75	30.3
5.5	11.05	1.8	5.8	52.34	21.8	5.9	47.34	24.2	5.2	44.00	8.6	5.3	55.20	30.3
6.5	11.17	2.1	6.8	52.86	21.8	6.9	47.53	23.8	6.2	43.58	8.5	6.3	53.71	30.3
7.5	11.31	2.5	7.7	53.36	21.8	7.9	47.70	23.5	7.2	43.18	8.4	7.3	52.28	30.3
8.5	11.49	2.9	8.7	53.85	21.8	8.9	47.83	23.1	8.2	42.80	8.3	8.3	50.89	30.3
9.5	11.69	3.2	9.7	54.34	21.8	9.9	47.94	22.8	9.2	42.41	8.3	9.3	49.52	30.4
10.5	11.93	3.6	10.7	54.84	21.7	10.9	48.03	22.4	10.2	42.01	8.2	10.3	48.14	30.4
11.5	12.20	3.9	11.7	55.35	21.7	11.9	48.11	22.1	11.2	41.60	8.1	11.3	46.74	30.5
12.5	12.48	4.3	12.7	55.89	21.7	12.9	48.21	21.7	12.2	41.18	8.1	12.2	45.29	30.5
13.5	12.75	4.7	13.7	56.44	21.6	13.9	48.34	21.2	13.2	40.74	8.0	13.2	43.77	30.6
14.5	12.96	5.1	14.7	57.02	21.6	14.9	48.51	20.8	14.2	40.29	7.9	14.2	42.21	30.6
15.5	13.12	5.5	15.7	57.59	21.6	15.9	48.73	20.4	15.2	39.84	7.8	15.2	40.60	30.7
16.5	13.19	5.9	16.7	58.17	21.7	16.9	49.00	20.0	16.2	39.40	7.7	16.2	38.97	30.7
17.5	13.19	6.3	17.7	58.74	21.7	17.9	49.31	19.6	17.2	38.96	7.5	17.2	37.36	30.6
18.5	13.13	6.7	18.7	59.28	21.8	18.9	49.63	19.2	18.2	38.54	7.4	18.2	35.81	30.6
19.5	13.03	7.1	19.7	59.79	21.9	19.9	49.95	18.9	19.2	38.15	7.2	19.2	34.32	30.5
20.5	12.93	7.5	20.7	60.29	21.9	20.9	50.28	18.5	20.2	37.78	7.0	20.2	32.89	30.5
21.5	12.84	7.8	21.7	60.78	22.0	21.9	50.57	18.2	21.2	37.42	6.9	21.2	31.52	30.4
22.5	12.77	8.2	22.7	61.25	22.1	22.9	50.83	17.8	22.2	37.06	6.7	22.2	30.19	30.4
23.5	12.76	8.5	23.7	61.73	22.1	23.9	51.07	17.5	23.2	36.72	6.6	23.2	28.88	30.3
24.5	12.78	8.9	24.7	62.22	22.1	24.9	51.29	17.2	24.2	36.37	6.4	24.2	27.54	30.3
25.5	12.83	9.2	25.7	62.73	22.2	25.9	51.53	16.8	25.2	35.98	6.3	25.2	26.16	30.3
26.5	12.87	9.6	26.7	63.25	22.2	26.9	51.78	16.4	26.2	35.58	6.2	26.2	24.73	30.3
27.5	12.89	10.0	27.7	63.80	22.3	27.9	52.06	16.0	27.2	35.18	6.0	27.2	23.23	30.3
28.5	12.86	10.4	28.7	64.37	22.3	28.9	52.38	15.6	28.2	34.76	5.9	28.2	21.67	30.2
29.5	12.77	10.8	29.7	64.94	22.4	29.9	52.75	15.3	29.1	34.35	5.7	29.2	20.07	30.2
30.5	12.59	11.2	30.7	65.50	22.5	30.9	53.17	14.9	30.1	33.94	5.5	30.2	18.48	30.1
31.5	12.35	11.7	31.7	66.04	22.6	31.9	53.63	14.5	31.1	33.54	5.3	31.2	16.91	30.0
32.4	12.06	12.1	32.7	66.56	22.8	32.9	54.09	14.2	32.1	33.15	5.0	32.2	15.38	29.9

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

a Ursæ Min. (Polaris).			51 Cephei (Hæv.).			6 Ursæ Min. (B.).			δ Ursæ Min.			λ Ursæ Min.		
Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.	Mean Solar Date.	Right Ascension.	Declina- tion North.
Nov.	h m	°	Nov.	h m	°	Nov.	h m	°	Nov.	h m	°	Nov.	h m	°
	1 26	+88 49		6 58	+87 11		12 13	+88 12		18 1	+86 36		19 11	+89 0
	s	"		s	"		s	"		s	"		s	"
1.4	72.06	12.1	1.7	6.56	22.8	1.9	54.09	14.2	1.1	33.15	65.0	1.2	75.38	29.9
2.4	71.74	12.5	2.7	7.06	22.9	2.9	54.55	13.9	2.1	32.79	64.8	2.2	73.91	29.8
3.4	71.42	12.8	3.7	7.54	23.1	3.9	55.00	13.6	3.1	32.46	64.6	3.2	72.52	29.6
4.4	71.13	13.2	4.7	8.00	23.2	4.9	55.44	13.3	4.1	32.13	64.3	4.2	71.19	29.5
5.4	70.86	13.5	5.7	8.46	23.3	5.9	55.84	13.0	5.1	31.81	64.1	5.2	69.89	29.4
6.4	70.63	13.9	6.7	8.92	23.4	6.9	56.21	12.7	6.1	31.50	63.9	6.2	68.61	29.3
7.4	70.44	14.2	7.7	9.38	23.5	7.9	56.57	12.4	7.1	31.17	63.8	7.2	67.33	29.2
8.4	70.26	14.6	8.7	9.86	23.6	8.9	56.94	12.1	8.1	30.84	63.6	8.2	66.01	29.1
9.4	70.07	14.9	9.7	10.36	23.7	9.9	57.32	11.7	9.1	30.49	63.4	9.2	64.64	29.0
10.4	69.84	15.3	10.7	10.88	23.9	10.9	57.75	11.4	10.1	30.13	63.2	10.2	63.22	28.9
11.4	69.56	15.7	11.6	11.39	24.0	11.9	58.23	11.0	11.1	29.76	62.9	11.2	61.76	28.8
12.4	69.21	16.1	12.6	11.91	24.2	12.9	58.75	10.7	12.1	29.40	62.7	12.2	60.29	28.7
13.4	68.78	16.5	13.6	12.42	24.4	13.9	59.31	10.4	13.1	29.06	62.4	13.2	58.83	28.5
14.4	68.28	16.8	14.6	12.90	24.6	14.9	59.89	10.1	14.1	28.73	62.1	14.2	57.42	28.4
15.4	67.74	17.2	15.6	13.36	24.8	15.9	60.48	9.8	15.1	28.42	61.8	15.2	56.08	28.2
16.4	67.16	17.5	16.6	13.79	25.0	16.9	61.07	9.5	16.1	28.14	61.5	16.2	54.80	28.0
17.4	66.59	17.9	17.6	14.19	25.2	17.9	61.65	9.2	17.1	27.88	61.2	17.1	53.60	27.8
18.4	66.06	18.2	18.6	14.58	25.4	18.9	62.18	9.0	18.1	27.64	61.0	18.1	52.46	27.6
19.4	65.57	18.5	19.6	14.97	25.6	19.8	62.69	8.7	19.1	27.40	60.7	19.1	51.36	27.4
20.4	65.12	18.8	20.6	15.36	25.7	20.8	63.18	8.5	20.1	27.15	60.4	20.1	50.26	27.2
21.4	64.69	19.1	21.6	15.77	25.9	21.8	63.65	8.2	21.1	26.90	60.2	21.1	49.13	27.1
22.4	64.28	19.4	22.6	16.19	26.0	22.8	64.14	7.9	22.1	26.64	60.0	22.1	47.97	26.9
23.4	63.85	19.7	23.6	16.63	26.2	23.8	64.66	7.7	23.1	26.36	59.7	23.1	46.76	26.8
24.4	63.38	20.1	24.6	17.09	26.4	24.8	65.21	7.4	24.1	26.07	59.4	24.1	45.49	26.6
25.4	62.86	20.4	25.6	17.56	26.6	25.8	65.81	7.1	25.1	25.77	59.2	25.1	44.18	26.4
26.4	62.28	20.8	26.6	18.01	26.8	26.8	66.45	6.8	26.1	25.48	58.9	26.1	42.87	26.2
27.4	61.62	21.1	27.6	18.46	27.1	27.8	67.13	6.6	27.1	25.20	58.5	27.1	41.58	26.0
28.4	60.89	21.4	28.6	18.88	27.3	28.8	67.82	6.3	28.1	24.95	58.2	28.1	40.33	25.8
29.4	60.13	21.7	29.6	19.27	27.6	29.8	68.52	6.1	29.1	24.71	57.8	29.1	39.15	25.5
30.4	59.37	22.0	30.6	19.63	27.9	30.8	69.21	5.9	30.1	24.50	57.5	30.1	38.06	25.2
31.4	58.62	22.3	31.6	19.97	28.1	31.8	69.87	5.7	31.1	24.32	57.2	31.1	37.04	24.9

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Min. (Polaris).		Mean Solar Date.	51 Cephei (Hæv.).		Mean Solar Date.	6 Ursæ Min. (B.).		Mean Solar Date.	δ Ursæ Min.		Mean Solar Date.	λ Ursæ Min.	
	Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.		Right Ascension.	Declina- tion North.
Dec.	h m 1 26	° +88 49	Dec.	h m 6 58	° +87 11	Dec.	h m 12 14	° +88 12	Dec.	h m 18 1	° +86 36	Dec.	h m 19 11	° +89 0
	s	"		s	"		s	"		s	"		s	"
1.4	58.62	22.3	1.6	19.97	28.1	1.8	9.87	5.7	1.1	24.32	57.2	1.1	37.04	24.9
2.4	57.88	22.6	2.6	20.30	28.4	2.8	10.50	5.6	2.1	24.14	56.8	2.1	36.08	24.7
3.4	57.21	22.8	3.6	20.62	28.6	3.8	11.10	5.4	3.1	23.97	56.5	3.1	35.15	24.4
4.4	56.58	23.1	4.6	20.95	28.8	4.8	11.67	5.2	4.0	23.80	56.2	4.1	34.22	24.2
5.4	55.97	23.3	5.6	21.29	29.1	5.8	12.24	5.0	5.0	23.61	56.0	5.1	33.29	24.0
6.4	55.35	23.6	6.6	21.64	29.3	6.8	12.83	4.8	6.0	23.41	55.7	6.1	32.32	23.8
7.3	54.70	23.9	7.6	21.99	29.5	7.8	13.44	4.6	7.0	23.21	55.4	7.1	31.31	23.6
8.3	54.02	24.2	8.6	22.35	29.8	8.8	14.09	4.4	8.0	23.01	55.1	8.1	30.27	23.3
9.3	53.28	24.5	9.6	22.73	30.0	9.8	14.79	4.2	9.0	22.80	54.8	9.1	29.21	23.1
10.3	52.46	24.8	10.6	23.09	30.3	10.8	15.53	4.0	10.0	22.61	54.4	10.1	28.16	22.8
11.3	51.58	25.1	11.6	23.42	30.6	11.8	16.30	3.8	11.0	22.43	54.1	11.1	27.15	22.5
12.3	50.64	25.3	12.6	23.72	30.9	12.8	17.07	3.6	12.0	22.28	53.7	12.1	26.21	22.2
13.3	49.68	25.5	13.6	24.00	31.2	13.8	17.84	3.5	13.0	22.15	53.3	13.1	25.34	21.9
14.3	48.71	25.8	14.6	24.26	31.5	14.8	18.60	3.4	14.0	22.05	52.9	14.1	24.57	21.6
15.3	47.76	26.0	15.6	24.49	31.9	15.8	19.32	3.3	15.0	21.97	52.6	15.1	23.88	21.3
16.3	46.85	26.1	16.6	24.70	32.2	16.8	20.00	3.2	16.0	21.89	52.2	16.1	23.24	21.0
17.3	45.99	26.3	17.6	24.90	32.4	17.8	20.65	3.0	17.0	21.82	51.9	17.1	22.63	20.7
18.3	45.18	26.5	18.6	25.12	32.7	18.8	21.28	2.9	18.0	21.75	51.6	18.1	22.02	20.4
19.3	44.39	26.7	19.5	25.36	32.9	19.8	21.92	2.8	19.0	21.67	51.3	19.1	21.37	20.2
20.3	43.60	26.9	20.5	25.61	33.2	20.8	22.57	2.7	20.0	21.57	51.0	20.1	20.69	19.9
21.3	42.78	27.1	21.5	25.87	33.5	21.8	23.25	2.6	21.0	21.46	50.7	21.1	19.96	19.6
22.3	41.91	27.3	22.5	26.14	33.8	22.8	23.97	2.4	21.9	21.36	50.3	22.1	19.19	19.4
23.3	40.99	27.5	23.5	26.40	34.1	23.8	24.73	2.3	22.9	21.25	50.0	23.0	18.42	19.1
24.3	40.00	27.7	24.5	26.65	34.4	24.8	25.53	2.2	23.9	21.15	49.6	24.0	17.67	18.8
25.3	38.95	28.0	25.5	26.89	34.8	25.7	26.34	2.1	24.9	21.07	49.2	25.0	16.95	18.4
26.3	37.87	28.1	26.5	27.10	35.1	26.7	27.15	2.1	25.9	21.01	48.8	26.0	16.29	18.1
27.3	36.77	28.3	27.5	27.27	35.5	27.7	27.95	2.1	26.9	20.98	48.4	27.0	15.73	17.7
28.3	35.68	28.4	28.5	27.41	35.8	28.7	28.72	2.0	27.9	20.97	48.1	28.0	15.26	17.4
29.3	34.63	28.6	29.5	27.53	36.1	29.7	29.46	2.0	28.9	20.98	47.7	29.0	14.85	17.0
30.3	33.62	28.7	30.5	27.64	36.4	30.7	30.17	2.0	29.9	21.00	47.4	30.0	14.49	16.7
31.3	32.66	28.8	31.5	27.76	36.7	31.7	30.85	2.0	30.9	21.02	47.0	31.0	14.16	16.4
32.3	31.73	28.9	32.5	27.88	37.0	32.7	31.51	2.0	31.9	21.04	46.7	32.0	13.83	16.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	43 Cephei (H.).		μ Hydri.		47 Cephei (H.).		δ Mensæ.		Groombridge 944.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.
	h m ° 55	° ' " +85 45	h m ° 2 33	° ' " -79 30	h m ° 2 53	° ' " +79 3	h m ° 4 24	° ' " -80 25	h m ° 5 32	° ' " +85 8
Jan. 1.4	62.55	63.6	39.23	63.8	51.24	31.5	18.11	64.4	33.69	71.8
11.3	59.63	64.1	38.10	64.6	50.42	33.4	17.12	66.7	33.26	75.0
21.3	56.69	63.9	36.91	64.8	49.47	34.7	15.96	68.5	32.34	78.0
31.3	53.86	63.1	35.69	64.4	48.44	35.4	14.67	69.8	30.96	80.7
Feb. 10.2	51.23	61.7	34.48	63.5	47.37	35.5	13.28	70.5	29.19	82.9
20.2	48.91	59.7	33.31	61.9	46.30	35.0	11.83	70.7	27.11	84.6
Mar. 1.2	46.98	57.3	32.22	59.8	45.28	34.0	10.36	70.3	24.79	85.8
11.2	45.51	54.6	31.23	57.3	44.35	32.4	8.91	69.4	22.35	86.3
21.1	44.58	51.6	30.37	54.4	43.55	30.3	7.52	67.9	19.90	86.2
31.1	44.19	48.5	29.66	51.2	42.92	27.9	6.22	66.0	17.53	85.6
Apr. 10.1	44.37	45.4	29.11	47.7	42.48	25.3	5.05	63.7	15.34	84.4
20.1	45.09	42.5	28.74	44.0	42.25	22.5	4.02	61.0	13.41	82.8
30.0	46.33	39.8	28.56	40.2	42.24	19.7	3.17	57.9	11.83	80.7
May 10.0	48.02	37.4	28.58	36.5	42.45	17.0	2.51	54.6	10.64	78.2
20.0	50.12	35.5	28.79	32.8	42.87	14.4	2.06	51.2	9.88	75.5
29.9	52.55	34.1	29.20	29.2	43.49	12.1	1.83	47.6	9.58	72.7
June 8.9	55.22	33.2	29.79	25.9	44.29	10.1	1.82	44.1	9.74	69.8
18.9	58.06	32.8	30.55	22.8	45.24	8.5	2.04	40.6	10.36	66.9
28.9	60.99	33.0	31.46	20.2	46.32	7.4	2.48	37.2	11.43	64.1
July 8.8	63.93	33.8	32.50	18.0	47.49	6.7	3.12	34.1	12.90	61.5
18.8	66.80	35.1	33.63	16.4	48.73	6.5	3.95	31.4	14.75	59.2
28.8	69.54	36.9	34.82	15.2	50.01	6.7	4.94	29.0	16.93	57.2
Aug. 7.8	72.09	39.1	36.04	14.7	51.31	7.5	6.07	27.1	19.40	55.6
17.7	74.38	41.8	37.25	14.8	52.59	8.7	7.29	25.8	22.10	54.3
27.7	76.38	44.8	38.42	15.5	53.83	10.4	8.58	25.0	24.98	53.4
Sept. 6.7	78.04	48.2	39.50	16.8	55.00	12.5	9.89	24.9	27.98	53.0
16.6	79.33	51.8	40.46	18.6	56.09	15.0	11.18	25.4	31.05	53.1
26.6	80.21	55.5	41.27	20.9	57.07	17.8	12.40	26.5	34.13	53.6
Oct. 6.6	80.67	59.3	41.90	23.5	57.93	20.8	13.51	28.2	37.15	54.5
16.6	80.69	63.2	42.33	26.5	58.64	24.1	14.48	30.4	40.05	55.9
26.5	80.26	66.9	42.54	29.7	59.20	27.5	15.26	33.0	42.78	57.7
Nov. 5.5	79.38	70.5	42.53	32.9	59.58	31.0	15.82	36.0	45.26	60.0
15.5	78.06	73.9	42.30	36.0	59.78	34.5	16.15	39.2	47.44	62.6
25.5	76.33	76.9	41.85	39.0	59.79	37.9	16.24	42.5	49.25	65.5
Dec. 5.4	74.22	79.5	41.20	41.6	59.61	41.1	16.07	45.8	50.65	68.6
15.4	71.78	81.6	40.38	43.8	59.23	44.1	15.65	48.9	51.57	71.9
25.4	69.09	83.1	39.42	45.5	58.67	46.7	14.99	51.8	52.00	75.2
35.3	66.23	84.0	38.34	46.7	57.95	48.9	14.12	54.3	51.92	78.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Mensæ.		25 Camelop. (H.)		1 Draconis (H.)		ζ Chamæleontis.		δ* Chamæleontis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.
	h m 6 47	° 80 42	h m 7 11	° 82 35	h m 9 23	° 81 43	h m 9 36	° 80 31	h m 10 44	° 80 2
	s "	"	s "	"	s "	"	s "	"	s "	"
Jan. 1.6	53.24	62.7	52.61	23.1	65.61	52.1	44.45	23.3	60.19	55.1
11.6	52.93	66.1	53.11	26.2	66.85	54.2	45.16	26.6	61.19	57.9
21.5	52.37	69.4	53.27	29.4	67.85	56.7	45.64	30.2	62.02	61.1
31.5	51.57	72.5	53.09	32.5	68.56	59.6	45.88	34.0	62.66	64.6
Feb. 10.5	50.57	75.3	52.57	35.4	68.96	62.6	45.89	37.8	63.10	68.3
20.5	49.38	77.6	51.75	38.1	69.06	65.7	45.66	41.6	63.32	72.2
Mar. 1.4	48.05	79.5	50.66	40.3	68.85	68.8	45.21	45.3	63.32	76.1
11.4	46.61	81.0	49.36	42.1	68.36	71.7	44.56	48.8	63.13	79.9
21.4	45.10	81.9	47.91	43.4	67.61	74.3	43.73	52.0	62.74	83.6
31.3	43.56	82.3	46.38	44.1	66.64	76.6	42.74	54.8	62.18	87.1
Apr. 10.3	42.03	82.2	44.83	44.2	65.51	78.4	41.62	57.3	61.45	90.3
20.3	40.54	81.5	43.33	43.8	64.27	79.6	40.41	59.3	60.59	93.1
30.3	39.13	80.4	41.95	42.8	62.97	80.3	39.12	60.8	59.61	95.5
May 10.2	37.83	78.8	40.72	41.3	61.65	80.5	37.80	61.8	58.54	97.4
20.2	36.67	76.7	39.70	39.3	60.38	80.1	36.46	62.2	57.41	98.8
30.2	35.68	74.3	38.91	37.0	59.19	79.1	35.14	62.1	56.23	99.7
June 9.2	34.87	71.5	38.40	34.5	58.12	77.6	33.88	61.5	55.04	100.1
19.1	34.27	68.5	38.16	31.7	57.21	75.7	32.70	60.3	53.86	99.9
29.1	33.89	65.3	38.21	28.7	56.48	73.3	31.62	58.7	52.73	99.1
July 9.1	33.74	62.0	38.54	25.7	55.96	70.6	30.69	56.6	51.67	97.8
19.0	33.82	58.7	39.16	22.8	55.65	67.6	29.92	54.1	50.72	96.1
29.0	34.14	55.4	40.03	19.9	55.56	64.4	29.34	51.3	49.90	93.9
Aug. 8.0	34.68	52.4	41.15	17.2	55.70	61.1	28.96	48.3	49.24	91.3
18.0	35.43	49.6	42.50	14.7	56.08	57.8	28.81	45.1	48.76	88.4
27.9	36.36	47.2	44.04	12.5	56.67	54.4	28.89	42.0	48.48	85.4
Sept. 6.9	37.45	45.3	45.75	10.6	57.47	51.1	29.20	38.9	48.42	82.3
16.9	38.67	43.9	47.61	9.1	58.48	47.9	29.73	36.0	48.59	79.2
26.9	39.98	43.2	49.57	7.9	59.68	45.0	30.49	33.5	48.99	76.3
Oct. 6.8	41.33	43.0	51.60	7.2	61.05	42.3	31.44	31.3	49.61	73.6
16.8	42.67	43.5	53.67	7.0	62.57	40.0	32.55	29.7	50.43	71.3
26.8	43.95	44.7	55.73	7.2	64.21	38.1	33.79	28.6	51.43	69.5
Nov. 5.7	45.13	46.4	57.74	7.9	65.95	36.6	35.11	28.2	52.57	68.2
15.7	46.17	48.7	59.65	9.1	67.75	35.6	36.47	28.4	53.82	67.6
25.7	47.01	51.5	61.41	10.7	69.56	35.2	37.82	29.3	55.13	67.6
Dec. 5.7	47.64	54.6	62.99	12.8	71.34	35.4	39.10	30.9	56.46	68.3
15.6	48.02	58.0	64.32	15.2	73.04	36.1	40.27	33.0	57.75	69.6
25.6	48.14	61.5	65.37	18.0	74.61	37.4	41.29	35.7	58.97	71.5
35.6	47.99	65.0	66.10	21.0	76.00	39.2	42.12	38.8	60.07	74.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Octantis.		β Chamæleonis.		32° Camelop. (H.)		κ Octantis.		δ Octantis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.
	h m 10 59	° -84 5	h m 12 12	° -78 47	h m 12 48	° +83 54	h m 13 25	° -85 18	h m 14 11	° -83 14
	s "	"	s "	"	s "	"	s "	"	s "	"
Jan. 1.7	65.74	32.5	56.44	38.8	24.18	33.2	49.06	27.5	58.59	24.6
	1.71	2.5	1.18	1.7	2.23	0.6	2.89	0.6	2.05	0.1
11.7	67.45	35.0	57.62	40.5	26.41	32.6	51.95	28.1	60.64	24.5
	1.45	3.0	1.09	1.7	2.20	0.1	2.86	1.2	2.10	0.5
21.7	68.90	38.0	58.71	42.8	28.61	32.7	54.81	29.3	62.74	25.0
	1.15	3.4	0.97	2.8	2.11	0.7	2.73	1.7	2.08	1.1
31.7	70.05	41.4	59.68	45.6	30.72	33.4	57.54	31.0	64.82	26.1
	0.82	3.6	0.83	3.2	1.93	1.4	2.54	2.3	2.00	1.7
Feb. 10.6	70.87	45.0	60.51	48.8	32.65	34.8	60.08	33.3	66.82	27.8
	0.48	3.8	0.68	3.4	1.69	1.9	2.30	2.7	1.89	2.1
20.6	71.35	48.8	61.19	52.2	34.34	36.7	62.38	36.0	68.71	29.9
	0.13	3.9	0.51	3.7	1.39	2.4	2.00	3.1	1.72	2.6
Mar. 1.6	71.48	52.7	61.70	55.9	35.73	39.1	64.38	39.1	70.43	32.5
	0.21	3.9	0.34	3.8	1.04	2.7	1.66	3.3	1.53	2.9
11.5	71.27	56.6	62.04	59.7	36.77	41.8	66.04	42.4	71.96	35.4
	0.53	3.8	0.17	3.8	0.67	3.0	1.30	3.6	1.30	3.2
21.5	70.74	60.4	62.21	63.5	37.44	44.8	67.34	46.0	73.26	38.6
	0.84	3.6	0.00	3.8	0.29	3.2	0.91	3.7	1.07	3.4
31.5	69.90	64.0	62.21	67.3	37.73	48.0	68.25	49.7	74.33	42.0
	1.11	3.4	0.17	3.7	0.10	3.1	0.52	3.8	0.80	3.6
Apr. 10.5	68.79	67.4	62.04	71.0	37.63	51.1	68.77	53.5	75.13	45.6
	1.36	3.0	0.32	3.5	0.47	3.0	0.12	3.8	0.53	3.6
20.4	67.43	70.4	61.72	74.5	37.16	54.1	68.89	57.3	75.66	49.2
	1.58	2.6	0.46	3.1	0.80	2.7	0.27	3.6	0.26	3.6
30.4	65.85	73.0	61.26	77.6	36.36	56.8	68.62	60.9	75.92	52.8
	1.76	2.2	0.60	2.9	1.11	2.4	0.66	3.5	0.02	3.5
May 10.4	64.09	75.2	60.66	80.5	35.25	59.2	67.96	64.4	75.90	56.3
	1.90	1.7	0.72	2.4	1.36	2.1	1.03	3.2	0.30	3.4
20.4	62.19	76.9	59.94	82.9	33.89	61.3	66.93	67.6	75.60	59.7
	2.00	1.2	0.81	2.0	1.56	1.5	1.38	2.8	0.57	3.1
30.3	60.19	78.1	59.13	84.9	32.33	62.8	65.55	70.4	75.03	62.8
	2.04	0.7	0.89	1.5	1.71	1.0	1.69	2.5	0.83	2.8
June 9.3	58.15	78.8	58.24	86.4	30.62	63.8	63.86	72.9	74.20	65.6
	2.05	0.1	0.95	1.0	1.82	0.5	1.97	2.1	1.06	2.4
19.3	56.10	78.9	57.29	87.4	28.80	64.3	61.89	75.0	73.14	68.0
	1.99	0.5	0.98	0.4	1.86	0.1	2.18	1.5	1.26	2.0
29.2	54.11	78.4	56.31	87.8	26.94	64.2	59.71	76.5	71.88	70.0
	1.90	1.0	1.00	0.1	1.85	0.6	2.35	1.0	1.44	1.6
July 9.2	52.21	77.4	55.31	87.7	25.09	63.6	57.36	77.5	70.44	71.6
	1.73	1.5	0.97	0.6	1.80	1.2	2.44	0.5	1.57	1.0
19.2	50.48	75.9	54.34	87.1	23.29	62.4	54.92	78.0	68.87	72.6
	1.53	2.0	0.92	1.2	1.71	1.7	2.47	0.1	1.65	0.5
29.2	48.95	73.9	53.42	85.9	21.58	60.7	52.45	77.9	67.22	73.1
	1.28	2.4	0.85	1.7	1.57	2.2	2.41	0.7	1.68	0.1
Aug. 8.1	47.67	71.5	52.57	84.2	20.01	58.5	50.04	77.2	65.54	73.0
	0.97	2.7	0.73	2.1	1.40	2.6	2.27	1.2	1.65	0.7
18.1	46.70	68.8	51.84	82.1	18.61	55.9	47.77	76.0	63.89	72.3
	0.64	2.9	0.60	2.5	1.20	3.0	2.06	1.8	1.57	1.2
28.1	46.06	65.9	51.24	79.6	17.41	52.9	45.71	74.2	62.32	71.1
	0.28	3.1	0.43	2.8	0.96	3.3	1.76	2.2	1.42	1.7
Sept. 7.1	45.78	62.8	50.81	76.8	16.45	49.6	43.95	72.0	60.90	69.4
	0.12	3.1	0.25	3.0	0.70	3.6	1.39	2.6	1.22	2.1
17.0	45.90	59.7	50.56	73.8	15.75	46.0	42.56	69.4	59.68	67.3
	0.49	3.1	0.05	3.0	0.41	3.8	0.97	2.8	0.97	2.5
27.0	46.39	56.6	50.51	70.8	15.34	42.2	41.59	66.6	58.71	64.8
	0.88	2.8	0.17	3.0	0.12	3.8	0.49	3.0	0.66	2.8
Oct. 7.0	47.27	53.8	50.68	67.8	15.22	38.4	41.10	63.6	58.05	62.0
	1.23	2.4	0.38	2.8	0.20	3.9	0.01	3.1	0.32	3.0
16.9	48.50	51.4	51.06	65.0	15.42	34.5	41.11	60.5	57.73	59.0
	1.54	2.1	0.58	2.5	0.52	3.9	0.53	3.0	0.03	3.0
26.9	50.04	49.3	51.64	62.5	15.94	30.6	41.64	57.5	57.76	56.0
	1.80	1.5	0.77	2.2	0.84	3.7	1.04	2.8	0.41	2.9
Nov. 5.9	51.84	47.8	52.41	60.3	16.78	26.9	42.68	54.7	58.17	53.1
	2.00	0.9	0.94	1.7	1.15	3.5	1.52	2.4	0.76	2.8
15.9	53.84	46.9	53.35	58.6	17.93	23.4	44.20	52.3	58.93	50.3
	2.13	0.3	1.07	1.1	1.45	3.1	1.94	2.1	1.10	2.4
25.8	55.97	46.6	54.42	57.5	19.38	20.3	46.14	50.2	60.03	47.9
	2.17	0.3	1.17	0.5	1.72	2.7	2.31	1.6	1.42	2.0
Dec. 5.8	58.14	46.9	55.59	57.0	21.10	17.6	48.45	48.6	61.45	45.9
	2.14	1.0	1.22	0.2	1.93	2.2	2.59	1.0	1.67	1.6
15.8	60.28	47.9	56.81	57.2	23.03	15.4	51.04	47.6	63.12	44.3
	2.03	1.7	1.24	0.8	2.10	1.6	2.78	0.4	1.86	1.0
25.8	62.31	49.6	58.05	58.0	25.13	13.8	53.82	47.2	64.98	43.3
	1.85	2.2	1.21	1.4	2.20	1.0	2.88	0.2	2.02	0.4
35.7	64.16	51.8	59.26	59.4	27.33	12.8	56.70	47.4	67.00	42.9

FIXED STARS, 1908.

(CONSTANTS OF PARIS CONFERENCE.)

555

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Apodis.		ρ Octantis.		γ Apodis.		ϵ Ursæ Minoris.		σ Octantis.	
	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.
	h m 14 36	° ' " -78 38	h m 15 21	° ' " -84 9	h m 16 19	° ' " -78 41	h m 16 55	° ' " +82 11	h 19	° ' " -89 14
	s "	"	s "	"	s "	"	s "	"	m s "	"
Jan. 1.9	18.40	53.6	45.10	15.4	10.55	14.0	14.54	18.6	10 51.6	33.0
	1.25	0.3	2.21	1.1	1.06	1.7	0.72	3.3	3.6	3.4
11.9	19.65	53.3	47.31	14.3	11.61	12.3	15.26	15.3	10 55.2	29.6
	1.30	0.3	2.38	0.5	1.18	1.2	0.99	3.0	6.6	3.3
21.9	20.95	53.6	49.69	13.8	12.79	11.1	16.25	12.3	11 1.8	26.3
	1.31	0.8	2.48	0.0	1.28	0.8	1.22	2.5	9.5	3.1
31.8	22.26	54.4	52.17	13.8	14.07	10.3	17.47	9.8	11 11.3	23.2
	1.28	1.4	2.51	0.5	1.33	0.2	1.41	2.0	12.0	2.9
Feb. 10.8	23.54	55.8	54.68	14.3	15.40	10.1	18.88	7.8	11 23.3	20.3
	1.22	1.8	2.47	1.1	1.36	0.2	1.55	1.4	14.2	2.5
20.8	24.76	57.6	57.15	15.4	16.76	10.3	20.43	6.4	11 37.5	17.8
	1.14	2.3	2.39	1.6	1.36	0.7	1.62	0.8	16.1	2.2
Mar. 1.8	25.90	59.9	59.54	17.0	18.12	11.0	22.05	5.6	11 53.6	15.6
	1.04	2.6	2.25	2.0	1.32	1.1	1.63	0.1	17.4	1.7
11.7	26.94	62.5	61.79	19.0	19.44	12.1	23.68	5.5	12 11.0	13.9
	0.91	2.9	2.07	2.4	1.27	1.6	1.59	0.6	18.5	1.3
21.7	27.85	65.4	63.86	21.4	20.71	13.7	25.27	6.1	12 29.5	12.6
	0.78	3.2	1.85	2.7	1.19	2.0	1.49	1.2	19.0	0.8
31.7	28.63	68.6	65.71	24.1	21.90	15.7	26.76	7.3	12 48.5	11.8
	0.63	3.3	1.59	3.0	1.08	2.3	1.33	1.7	19.3	0.4
Apr. 10.6	29.26	71.9	67.30	27.1	22.98	18.0	28.09	9.0	13 7.8	11.4
	0.48	3.4	1.32	3.2	0.97	2.5	1.14	2.2	19.1	0.1
20.6	29.74	75.3	68.62	30.3	23.95	20.5	29.23	11.2	13 26.9	11.5
	0.31	3.5	1.01	3.4	0.83	2.8	0.91	2.6	18.5	0.6
30.6	30.05	78.8	69.63	33.7	24.78	23.3	30.14	13.8	13 45.4	12.1
	0.15	3.4	0.69	3.4	0.68	2.9	0.65	2.9	17.5	1.1
May 10.6	30.20	82.2	70.32	37.1	25.46	26.2	30.79	16.7	14 2.9	13.2
	0.02	3.3	0.35	3.4	0.51	3.1	0.38	3.1	16.2	1.6
20.5	30.18	85.5	70.67	40.5	25.97	29.3	31.17	19.8	14 19.1	14.8
	0.18	3.1	0.01	3.4	0.34	3.1	0.10	3.1	14.6	1.9
30.5	30.00	88.6	70.68	43.9	26.31	32.4	31.27	22.9	14 33.7	16.7
	0.34	2.8	0.33	3.2	0.16	3.1	0.18	3.1	12.5	2.3
June 9.5	29.66	91.4	70.35	47.1	26.47	35.5	31.09	26.0	14 46.2	19.0
	0.50	2.5	0.66	2.9	0.03	3.0	0.46	3.0	10.3	2.6
19.5	29.16	93.9	69.69	50.0	26.44	38.5	30.63	29.0	14 56.5	21.6
	0.63	2.1	0.98	2.6	0.20	2.8	0.71	2.8	7.7	2.9
29.4	28.53	96.0	68.71	52.6	26.24	41.3	29.92	31.8	15 4.2	24.5
	0.75	1.7	1.26	2.3	0.38	2.5	0.96	2.5	5.0	3.0
July 9.4	27.78	97.7	67.45	54.9	25.86	43.8	28.96	34.3	15 9.2	27.5
	0.85	1.2	1.50	1.9	0.55	2.3	1.18	2.2	2.1	3.1
19.4	26.93	98.9	65.95	56.8	25.31	46.1	27.78	36.5	15 11.3	30.6
	0.92	0.7	1.71	1.3	0.69	1.9	1.36	1.8	0.8	3.1
29.3	26.01	99.6	64.24	58.1	24.62	48.0	26.42	38.3	15 10.5	33.7
	0.96	0.1	1.86	0.9	0.82	1.4	1.52	1.3	3.7	3.0
Aug. 8.3	25.05	99.7	62.38	59.0	23.80	49.4	24.90	39.6	15 6.8	36.7
	0.97	0.4	1.94	0.3	0.91	0.9	1.64	0.9	6.5	2.8
18.3	24.08	99.3	60.44	59.3	22.89	50.3	23.26	40.5	15 0.3	39.5
	0.95	0.9	1.96	0.3	0.97	0.4	1.73	0.4	9.1	2.5
28.3	23.13	98.4	58.48	59.0	21.92	50.7	21.53	40.9	14 51.2	42.0
	0.88	1.4	1.90	0.8	0.99	0.1	1.78	0.1	11.4	2.1
Sept. 7.2	22.25	97.0	56.58	58.2	20.93	50.6	19.75	40.8	14 39.8	44.1
	0.78	1.9	1.77	1.4	0.98	0.6	1.79	0.6	13.3	1.7
17.2	21.47	95.1	54.81	56.8	19.95	50.0	17.96	40.2	14 26.5	45.8
	0.64	2.3	1.56	1.9	0.92	1.2	1.75	1.1	14.6	1.1
27.2	20.83	92.8	53.25	54.9	19.03	48.8	16.21	39.1	14 11.9	46.9
	0.47	2.6	1.29	2.3	0.82	1.7	1.68	1.6	15.5	0.5
Oct. 7.2	20.36	90.2	51.96	52.6	18.21	47.1	14.53	37.5	13 56.4	47.4
	0.27	2.8	0.96	2.6	0.68	2.1	1.56	2.1	15.7	0.1
17.1	20.09	87.4	51.00	50.0	17.53	45.0	12.97	35.4	13 40.7	47.3
	0.06	2.9	0.57	2.9	0.50	2.4	1.39	2.5	15.2	0.7
27.1	20.03	84.5	50.43	47.1	17.03	42.6	11.58	32.9	13 25.5	46.6
	0.16	2.9	0.16	3.0	0.30	2.7	1.20	2.9	14.2	1.3
Nov. 6.1	20.19	81.6	50.27	44.1	16.73	39.9	10.38	30.0	13 11.3	45.3
	0.38	2.7	0.27	3.0	0.09	2.8	0.97	2.8	12.5	1.9
16.0	20.57	78.9	50.54	41.1	16.64	37.1	9.41	26.8	12 58.8	43.4
	0.61	2.5	0.70	2.9	0.14	2.9	0.70	3.5	10.3	2.4
26.0	21.18	76.4	51.24	38.2	16.78	34.2	8.71	23.3	12 48.5	41.0
	0.80	2.1	1.12	2.6	0.37	2.7	0.40	3.6	7.7	2.8
Dec. 6.0	21.98	74.3	52.36	35.6	17.15	31.5	8.31	19.7	12 40.8	38.2
	0.97	1.7	1.49	2.3	0.60	2.6	0.09	3.7	4.8	3.1
16.0	22.95	72.6	53.85	33.3	17.75	28.9	8.22	16.0	12 36.0	35.1
	1.11	1.1	1.83	1.9	0.79	2.3	0.22	3.7	1.6	3.2
25.9	24.06	71.5	55.68	31.4	18.54	26.6	8.44	12.3	12 34.4	31.9
	1.22	0.6	2.09	1.4	0.97	1.9	0.52	3.5	1.6	3.4
35.9	25.28	70.9	57.77	30.0	19.51	24.7	8.96	8.8	12 36.0	28.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	12 Year Cat. 1879.		λ^1 Octantis.		ν^1 Octantis.		β^1 Octantis.		γ^1 Octantis.	
	Right Ascension.	Declina- tion North.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.	Right Ascension.	Declina- tion South.
	h m 20 51	° +80 12	h m 21 36	° -83 8	h m 22 13	° -86 25	h m 22 36	° -81 51	h m 23 46	° -82 31
Jan. 2.1	42.13	36.0	41.00	51.5	56.90	90.7	33.77	73.7	38.79	74.6
12.1	41.42 0.71	33.1 2.9	40.30 0.70	48.5 3.0	54.93 1.97	87.9 2.8	32.84 0.93	71.3 2.4	37.41 1.38	72.9 1.7
22.1	40.94 0.48	30.0 3.1	39.89 0.41	45.3 3.2	53.48 1.45	84.7 3.2	32.11 0.73	68.4 2.9	36.17 1.24	70.7 2.2
Feb. 1.1	40.69 0.25	26.6 3.4	39.79 0.10	41.8 3.5	52.58 0.90	81.3 3.4	31.60 0.51	65.1 3.3	35.12 1.05	68.0 2.7
11.0	40.70 0.01	23.2 3.4	40.00 0.21	38.2 3.6	52.25 0.33	77.7 3.6	31.33 0.27	61.6 3.5	34.27 0.85	64.8 3.2
	40.70 0.24	23.2 3.3	40.00 0.50	38.2 3.6	52.25 0.25	77.7 3.8	31.33 0.03	61.6 3.6	34.27 0.62	64.8 3.4
21.0	40.94 0.48	19.9	40.50	34.6	52.50	73.9	31.30	58.0	33.65	61.4
Mar. 2.0	41.42 0.71	16.8 3.1	41.29 0.79	31.1 3.5	53.31 0.81	70.2 3.7	31.51 0.21	54.3 3.7	33.28 0.37	57.7 3.7
12.0	42.12 0.89	14.0 2.8	42.35 1.06	27.7 3.4	54.66 1.35	66.5 3.7	31.96 0.45	50.6 3.7	33.16 0.12	54.0 3.7
21.9	43.01 1.04	11.6 2.4	43.64 1.29	24.5 3.2	56.50 1.84	63.0 3.5	32.63 0.73	46.9 3.7	33.16 0.13	54.0 3.9
31.9	44.05 1.16	9.8 1.8	45.14 1.50	21.6 2.9	58.80 2.30	59.7 3.3	33.51 0.88	43.5 3.4	33.67 0.38	46.3 3.8
		9.8 1.3	45.14 1.69	21.6 2.6	58.80 2.70	59.7 3.0	33.51 1.08	43.5 3.2	33.67 0.63	46.3 3.8
Apr. 10.9	45.21 1.23	8.5 0.6	46.83 1.83	19.0 2.1	61.50 3.05	56.7 2.6	34.59 1.25	40.3 2.9	34.30 0.86	42.5 3.5
20.9	46.44 1.26	7.9 0.0	48.66 1.95	16.9 1.7	64.55 3.34	54.1 2.2	35.84 1.41	37.4 2.6	35.16 1.08	39.0 3.2
30.8	47.70 1.25	7.9 0.6	50.61 2.02	15.2 1.3	67.89 3.56	51.9 1.8	37.25 1.52	34.8 2.1	36.24 1.28	35.8 3.0
May 10.8	48.95 1.20	8.5 1.2	52.63 2.05	13.9 0.7	71.45 3.69	50.1 1.2	38.77 1.62	32.7 1.6	37.52 1.44	32.8 2.5
20.8	50.15 1.10	9.7 1.7	54.68 2.04	13.2 0.3	75.14 3.76	48.9 0.7	40.39 1.67	31.1 1.2	38.96 1.58	30.3 2.1
30.7	51.25 0.99	11.4 2.2	56.72 1.98	12.9 0.3	78.90 3.74	48.2 0.2	42.06 1.68	29.9 0.6	40.54 1.69	28.2 1.6
June 9.7	52.24 0.83	13.6 2.7	58.70 1.88	13.2 0.9	82.64 3.62	48.0 0.3	43.74 1.67	29.3 0.1	42.23 1.75	26.6 1.0
19.7	53.07 0.65	16.3 3.0	60.58 1.72	14.1 1.3	86.26 3.42	48.3 0.9	45.41 1.60	29.2 0.5	43.98 1.76	25.6 0.5
29.7	53.72 0.47	19.3 3.3	62.30 1.53	15.4 1.7	89.68 3.13	49.2 1.4	47.01 1.50	29.7 1.0	45.74 1.73	25.1 0.1
July 9.6	54.19 0.26	22.6 3.4	63.83 1.29	17.1 2.1	92.81 2.76	50.6 1.9	48.51 1.35	30.7 1.5	47.47 1.66	25.2 0.7
19.6	54.45 0.05	26.0	65.12 1.02	19.2 2.5	95.57 2.30	52.5 2.3	49.86 1.16	32.2 2.0	49.13 1.54	25.9 1.2
29.6	54.50 0.17	29.5 3.5	66.14 0.71	21.7 2.8	97.87 1.78	54.8 2.6	51.02 0.94	34.2 2.3	50.67 1.36	27.1 1.7
Aug. 8.6	54.33 0.37	33.1 3.5	66.85 0.39	24.5 2.9	99.65 1.20	57.4 2.8	51.96 0.70	36.5 2.6	52.03 1.15	28.8 2.1
18.5	53.96 0.57	36.6 3.4	67.24 0.05	27.4 3.0	100.85 0.58	60.2 3.0	52.66 0.43	39.1 2.9	53.18 0.91	30.9 2.5
28.5	53.39 0.75	40.0 3.2	67.29 0.28	30.4 3.0	101.43 0.07	63.2 3.1	53.09 0.15	42.0 3.0	54.09 0.63	33.4 2.8
Sept. 7.5	52.64 0.91	43.2 2.9	67.01 0.61	33.4 2.8	101.36 0.71	66.3 3.0	53.24 0.14	45.0 3.0	54.72 0.32	36.2 3.0
17.4	51.73 1.07	46.1 2.5	66.40 0.91	36.2 2.6	100.65 1.32	69.3 2.8	53.10 0.42	48.0 2.9	55.04 0.02	39.2 3.1
27.4	50.66 1.19	48.6 2.1	65.49 1.17	38.8 2.2	99.33 1.89	72.1 2.6	52.68 0.68	50.9 2.7	55.06 0.29	42.3 3.1
Oct. 7.4	49.47 1.29	50.7 1.7	64.32 1.39	41.0 1.8	97.44 2.38	74.7 2.1	52.00 0.91	53.6 2.4	54.77 0.59	45.4 2.8
17.4	48.18 1.35	52.4 1.2	62.93 1.54	42.8 1.2	95.06 2.79	76.8 1.7	51.09 1.11	56.0 1.9	54.18 0.86	48.2 2.6
27.3	46.83 1.39	53.6 0.6	61.39 1.63	44.0 0.6	92.27 3.07	78.5 1.1	49.98 1.25	57.9 1.5	53.32 1.10	50.8 2.2
Nov. 6.3	45.44 1.38	54.2 0.1	59.76 1.66	44.6 0.1	89.20 3.24	79.6 0.4	48.73 1.35	59.4 0.9	52.22 1.29	53.0 1.7
16.3	44.06 1.35	54.3 0.5	58.10 1.61	44.7 0.6	85.96 3.28	80.0 0.1	47.38 1.38	60.3 0.2	50.93 1.44	54.7 1.2
26.3	42.71 1.27	53.8 1.1	56.49 1.51	44.1 1.2	82.68 3.18	79.9 0.8	46.00 1.38	60.5 0.4	49.49 1.52	55.9 0.6
Dec. 6.2	41.44 1.16	52.7 1.7	54.98 1.34	42.9 1.8	79.50 2.98	79.1 1.4	44.62 1.31	60.1 1.0	47.97 1.55	56.5 0.1
16.2	40.28 1.02	51.0 2.1	53.64 1.12	41.1 2.3	76.52 2.66	77.7 2.0	43.31 1.20	59.1 1.6	46.42 1.53	56.4 0.7
26.2	39.26 0.83	48.9 2.7	52.52 0.87	38.8 2.7	73.86 2.25	75.7 2.5	42.11 1.03	57.5 2.2	44.89 1.45	55.7 1.4
36.1	38.43	46.2	51.65	36.1	71.61	73.2	41.08	55.3	43.44	54.3

ON THE ARRANGEMENT AND USE OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC.

The first part of this Ephemeris, embracing the positions of the Sun and Moon, the distances of the Moon from the center of the Sun, from the centers of the four most conspicuous planets, and from certain fixed stars, together with the ephemerides of the planets Mercury, Venus, Mars, Jupiter, and Saturn, is designed for the special use of navigators. The remainder of the work is intended to meet the wants of astronomers. It contains the ephemerides of Uranus and Neptune, the heliocentric co-ordinates of the seven major planets, the rectangular equatorial co-ordinates of the Sun, the Moon's longitude and latitude, data for the libration of the Moon, the obliquity of the ecliptic, the nutation, the positions of 383 standard stars, the ephemeris for the meridian of Washington, etc.

TIME.

Astronomers make use of three different kinds of time, namely: First, true or apparent solar time; second, mean solar time; third, sidereal time.

True or Apparent Solar Time.—This species of time is called indiscriminately either true solar time or apparent solar time, and is measured by the motion of the true Sun; the length of the day being the interval between two successive transits of the Sun over the same meridian, and the time of day being always the hour angle of the Sun from the meridian. This is the most obvious and natural measure of time, but owing to the obliquity of the ecliptic and the varying motion of the Earth in its orbit, the intervals between successive returns of the Sun to the same meridian are not exactly equal, and consequently ordinary clocks and chronometers can not be regulated to true solar time.

Mean Solar Time.—To avoid the irregularity which would arise from using the true solar day, astronomers have recourse to a mean solar day, whose length is equal to the average of all the true solar days in a year. Just as the true solar day depends upon the motion of the true Sun, so the mean solar day is made to depend upon the motion of an imaginary mean Sun which moves along the equator at a perfectly uniform rate, and whose hour angle from any given meridian is always the mean solar time thereat. Ordinary clocks and watches and the chronometers used by navigators are regulated to this species of time.

Equation of Time.—The imaginary mean Sun is supposed to keep as near the true Sun as is consistent with perfect uniformity of motion, but it is sometimes before and sometimes behind the latter, the greatest difference amounting to rather more than one-quarter of an hour. The interval between the true Sun and the imaginary mean Sun is the equation of time, given on pages I and II of the Ephemeris for the meridian of Greenwich, and a knowledge of it is necessary for converting true solar time into mean solar time, or vice versa. As the mean Sun is an imaginary body, mean solar time can not be directly observed, but it can be got either from observations of the true Sun by applying to them the correction for the equation of time, or from observations of the stars by means of the sidereal time of mean noon, given on page II of the Ephemeris for the meridian of Greenwich.

Sidereal Time.—Sidereal time is measured, roughly speaking, by the daily motion of the stars; or in strict accuracy, by the daily motion of that point in the equator from which the true right ascensions of the stars are counted. The point in question is the vernal equinox, and its hour angle is always the sidereal time. Astronomical clocks are usually regulated to sidereal time, and are then called sidereal clocks.

Sidereal Day.—A sidereal day is the interval between two successive transits of the vernal equinox over the same meridian. It is $3^m 55^s.909$ of mean solar time shorter than the mean solar day, the tropical year of 365.2422 solar days being divided into 366.2422 sidereal days, each comprising 24 sidereal hours. The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the true vernal equinox over the upper meridian, and ending with its return to the same meridian. About March 23 of each year the sidereal clock agrees with the mean-time or ordinary clock, and the former gains on the latter $3^m 56^s.555$ of sidereal time per day, so that at the end of a year it will have gained an entire day, and will again agree with the mean-time clock.

Civil Day.—According to the customs of society, the civil day commences at midnight, and comprises twenty-four hours, which extend to the next following midnight. The hours are counted from 0 to 12 in two series; the first, marked A. M., running from midnight to noon, and the second, marked P. M., running from noon to midnight.

Astronomical Day.—The astronomical day begins at noon on the civil day of the same date. It also comprises twenty-four hours, but they are reckoned from 0 to 24, and run from the noon of one day to that of the next following. Astronomical time as well as civil time may be either apparent or mean, according as it is reckoned from apparent noon or from mean noon.

The civil day begins twelve hours before the astronomical day; therefore the first half of the civil day corresponds to the last half of the preceding astronomical day, and the last half of the civil day coincides with the first half of the astronomical day of the same date. Thus, January 9, 2 o'clock, A. M., civil time, is January 8, 14^h, astronomical time; and January 9, 2 o'clock, P. M., civil time, is also January 9, 2^h, astronomical time. Hence, we have the following rules:

To convert Civil Time into Astronomical Time.—If the civil time is marked A. M., take one from the day and add twelve to the hours, and the result will be the corresponding astronomical time; if the civil time is marked P. M., take away the designation P. M., and the astronomical time will result.

To convert Astronomical Time into Civil Time.—If the astronomical time is less than twelve hours, simply write P. M. after it. If greater than twelve hours, subtract twelve hours from it, mark the result A. M., and add one to the days. For example, October 3, 23 hours astronomical time, is October 4, 11 o'clock, A. M., civil time.

To find Greenwich Time.—Express the longitude from Greenwich in time, and when west, add it to the local time, or when east, subtract it from the local time. The result will be the corresponding Greenwich time; mean or sidereal, according as the local time employed is mean or sidereal. For use with Part I of this Ephemeris, Greenwich mean time is ordinarily required.

PART I—THE EPHEMERIS FOR THE MERIDIAN OF GREENWICH.

Pages 2–217 give data arranged under the heads of the several months, and are therefore designated as the Calendar. Each month covers 18 pages, numbered from I to XVIII, whose contents are as follows:

Page I contains, for Greenwich apparent noon of each day, *The Sun's Apparent Right Ascension* and *Declination*, and the *Equation of Time*. Adjoining columns contain the differences of these quantities for one hour. By multiplying any one of these differences by

the hours and parts of an hour from Greenwich apparent noon, and adding the product to, or subtracting it from, the corresponding quantity at noon, according as that quantity is increasing or decreasing, we obtain the value of the quantity in question for any given Greenwich apparent time. The hourly differences are given for the instant of apparent noon at Greenwich, but, when great accuracy is required, they should be interpolated for half the hours and parts of an hour of the Greenwich apparent time.

The *Equation of Time* given on page I is the mean time of apparent noon, or the hour angle of the mean Sun at that instant. The heading of the column directs how the equation is to be applied to apparent time, or the time given by an observation of the Sun, in order to get mean time. When in the course of the month there is a change from addition to subtraction or the reverse (as in the months of April and June), the two different directions are separated by a line, while a corresponding line below points out the dates between which the change occurs.

The *Sun's Semidiameter* and the *Sidereal Time of Semidiameter Passing Meridian* are also given on page I. The semidiameter is used in reducing the altitude of the upper or lower limb of the Sun to the altitude of the center; and in reducing the angular distance between the limb of the Sun and any other object, to the distance from the center of the Sun. The sidereal time of semidiameter passing the meridian is employed in obtaining the passage of the Sun's center over the wires of a transit instrument, when the passage of one limb only has been observed. The quantity found in this column is to be added to the time of transit of the first, or western, limb; and to be subtracted from the time of transit of the second, or eastern, limb.

This page is chiefly used when the Sun is observed on the meridian, at which instant the local apparent time is $0^h 0^m 0^s$. The longitude from Greenwich expressed in time is then the corresponding Greenwich apparent time, before or after noon according as the longitude is east or west. The longitude of any place is therefore the factor employed in reducing the quantities on this page to apparent noon at that place.

The right ascension of the Sun thus reduced is the sidereal time of local apparent noon, and the difference between that and the clock time of the meridian passage of the Sun is the error of the clock on sidereal time.

The declination of the Sun reduced to the meridian, or apparent noon, of the place, is required in finding the latitude from a meridian altitude of the Sun.

As an example of the use of page I:—

Let the Sun's declination be required at apparent noon, 1908, July 4, at a place whose longitude is $89^\circ 40'$, or $5^h 58^m 40^s$ east from Greenwich:—

Local apparent time	July 4,	$0 \ 0 \ 0$
Longitude from Greenwich (subtractive)		$5 \ 58 \ 40$
Greenwich apparent time	July 3,	$18 \ 1 \ 20$

Reducing the minutes and seconds to decimals of an hour, we find that this moment is $18^h.022$ after Greenwich apparent noon on July 3, or $5^h.978$ before Greenwich apparent noon on July 4.

On page 110 of the Ephemeris we find that the change of declination in one hour is:

July 3, at Greenwich apparent noon	— 11.92
July 4, at Greenwich apparent noon	— 12.92
Difference for one day	— 1.00

If great exactness is desired, we find the amount of this hourly difference for the time which is halfway between Greenwich noon and the time of observation; that is, for 9 hours

after Greenwich noon of the 3rd, this being half of 18 hours. Nine hours is 0.375 of a day; so the calculation is as follows:

Difference for one hour, July 3	— 11.92
Change for 0.375 of a day or $1''.00 \times 0.375$	— 0.38
Difference at 9 hours after noon	— 12.30
$12''.30 \times 18.022 = 221''.7 = 3' 41''.7$	
Declination at Greenwich noon, July 3	N. 22 59 7.8
Change in 18.022 hours (subtractive)	3 41.7
Sun's declination at time of observation	N. 22 55 26.1

When the time of observation is only a few hours before Greenwich noon, it may be better to count the longitude backward from this nearest noon. Thus, in the example just given, the time is 5^h.978 before Greenwich noon of July 4; half this interval is about 0.12 of a day, and the hourly motion for the middle of the interval is 12''.80. Then, we find—

Declination at Greenwich noon, July 4	N. 22 54 9.7
Product of $12''.80 \times 5.978 = 76''.5$ (additive)	1 16.5
Sun's declination at time of observation	N. 22 55 26.2

It will always be well to make the calculation in both ways, as a check; but if the results differ slightly, the one derived from the nearest noon should be regarded as the more accurate. At sea, however, it is ordinarily sufficient to compute the declination to the nearest half minute, and the reduction may then be found by Table 12 of BOWDITCH'S *American Practical Navigator*.

Page II contains, for Greenwich mean noon of each day, *The Sun's Apparent Right Ascension* and *Declination*, the *Equation of Time*, and the *Sidereal Time of Mean Noon*. The hourly changes of these quantities are also given, and may be used in reducing them for the longitude, or to any Greenwich mean time. When great precision is required, these changes should be interpolated for half the Greenwich time, as described in explaining the calculation of the declination.

The *Equation of Time* given on page II is the apparent time of mean noon, and is equivalent to the hour angle of the true Sun at the instant of mean noon. The heading of the column directs how the equation must be applied to mean time in order to obtain apparent time.

The *Sidereal Time of Mean Noon* is the right ascension of the mean Sun at Greenwich mean noon. It may be reduced for the longitude, or to any Greenwich mean time, by using the hourly difference, 9^s.8565; or by Table III appended to this volume, for reducing intervals of mean solar to sidereal time; or by Table 9 of BOWDITCH'S *Navigator*.

The right ascensions and declinations on pages I and II are affected both by aberration and nutation, and therefore denote the *apparent* positions of the *true* Sun. Page I is used for observations which depend upon apparent time, as when the Sun is observed on the meridian; while page II is used when the times have been noted by a clock or chronometer regulated to mean time, as is the case in most observations of the Sun out of the meridian.

The Sun's declination is required whenever that body is observed for the purpose of finding latitude, local time, or azimuth, and the equation of time is needed in finding the apparent time when determining the latitude from observations of the Sun out of the meridian.

The sidereal time of mean noon, or right ascension of the mean Sun, is useful in converting mean time to sidereal time. We first find the Greenwich mean time, then the right ascension of the mean Sun for that time, and this being added to the local astronomical mean time will give the sidereal time.

The sidereal time of mean noon, reduced for the longitude of the place, is also used in converting sidereal time to mean time. Subtracting the reduced value from the given sidereal time gives the interval of sidereal time from noon, and that is converted into the required mean time by subtracting from it the corresponding reduction of a sidereal interval to a mean-time interval, taken from Table II appended to this volume, or from Table 8 of BOWDITCH'S *Navigator*. Instead of using Table II, this reduction may be found by multiplying $9^s.8296$ by the hours and parts of an hour of the sidereal interval from noon.

As examples of the use of page II:—

1.—Let the Sun's right ascension and the equation of time be required for 1908, July 13, $9^h 2^m 30^s$, A. M., mean time, at a place whose longitude is $100^\circ 10'$, or $6^h 40^m 40^s$, west of Greenwich.

Local astronomical mean time	July 12,	h m s	
Longitude from Greenwich (additive)		21 2 30	
Greenwich mean time	July 13,	6 40 40	
<i>Sun's Right Ascension.</i>		3 43 10 = $3^h.7194$	
		<i>Equation of Time.</i>	
July 13, Greenwich noon	July 13, Greenwich noon	h m s	m s
H. D. $10^s.152 \times 3.7194$	H. D. $+ 0^s.295 \times 3.7194$	7 29 19.42	5 28.09 (subtractive)
		+ 37.76	+ 1.10
		7 29 57.18	5 29.19

In this case the hourly differences interpolated to half the interval, or $1^h.86$ after noon, have been used. The equation of time is here additive to mean time. Its reduction could have been found by Table 12 of BOWDITCH'S *Navigator*.

2.—If the sidereal time is required for the same date and time, we have—

July 13, sidereal time (at Greenwich mean noon)	h m s
Reduction for $3^h 43^m 10^s$ from Table III, or $9^s.8565 \times 3.7194$	7 23 51.33
Add the local astronomical mean time	+ 36.66
The required sidereal time is (rejecting 24^h)	21 2 30.00
	4 26 57.99

The reduction $36^s.66$ could have been found in Table III corresponding to the Greenwich mean time $3^h 43^m 10^s$, or by Table 9 of BOWDITCH'S *Navigator*.

3.—On 1908, July 13, A. M., at a place whose longitude is $100^\circ 10' W.$, suppose the sidereal time to be $4^h 26^m 57^s.99$, and that the corresponding mean time is required.

The astronomical day is July 12; the longitude in time, $+ 6^h 40^m 40^s$, or $+ 6^h.678$.

July 12, sidereal time (at Greenwich mean noon)	h m s
Reduction for $6^h 40^m 40^s$ from Table III, or $9^s.8565 \times 6.678$	7 19 54.78
The sidereal time of local mean noon	+ 1 5.82
The given sidereal time ($+ 24^h$, if necessary for the following subtraction)	7 21 0.60
Subtracting the first from the second gives the sidereal interval from noon	28 26 57.99
Reduction for $21^h 5^m 57^s.39$ from Table II, or $- 9^s.8296 \times 21.0993$	21 5 57.39 = $21^h.0993$
The required astronomical mean time is	21 3 27.40
	July 12, 21 2 29.99

Page III contains, for Greenwich mean noon of each day, *The Sun's True Longitude* and *Latitude*, and the *Logarithm of the Radius Vector of the Earth*. The longitudes of the Sun are the true geometric longitudes, not corrected for aberration. They are given in two columns, headed respectively λ and λ' ; λ representing the Sun's longitude counted from the true equinox of the date; and λ' , the same co-ordinate counted from the mean equinox of the beginning of the Besselian fictitious year. The latitude is referred to the mean ecliptic of the date. Columns of hourly differences are given to facilitate finding the Sun's longitude, or the logarithm of the radius vector, for any hour from noon.

The last column on page III contains the *Mean Time of Sidereal Noon*; that is, the number of hours, minutes, and seconds after Greenwich mean noon when the vernal equinox passes the meridian of Greenwich. It may be reduced to any meridian, or to any Greenwich sidereal time, by using the hourly difference, $-9^s.8296$, to effect the necessary interpolation. The reduction, however, can be taken directly from Table II for reducing intervals of sidereal time to mean solar time, or from Table 8 of BOWDITCH'S *Navigator*.

This column may be used in converting sidereal time to mean time, instead of that on page II. As an illustration, let us take Example 3, above.

It is seen in advance that the sum of the mean time of sidereal noon and the given sidereal time is less than 24 hours. Were it more than 24 hours, the mean time of sidereal noon should be taken out for July 11; that is, the preceding astronomical day.

	h	m	s
July 12, the mean time of Greenwich sidereal noon is	16	37	21.39
Reduction for longitude from Table II, or $-9^s.8296 \times 6.678$	—	1	5.64
The mean time of local sidereal noon	16	36	15.75
Add the given sidereal time	4	26	57.99 = 4 ^h .4494
The sum is	21	3	13.74
Reduction for 0 ^h 58 ^m 57 ^s .84 from Table II, or $-9^s.8296 \times 4.4494$	—	43	74
The required astronomical mean time July 12, 21	2	30	00

Page IV contains *The Moon's Semidiameter and Equatorial Horizontal Parallax*, for each mean noon and midnight at Greenwich. Columns adjoining those of the horizontal parallax give the change of that quantity in one hour, by means of which it can be reduced to any other Greenwich mean time, in the same way as the Sun's declination and the equation of time in the preceding examples. The sign plus or minus is prefixed to the hourly differences, according as the horizontal parallax is increasing or decreasing.

The reduction of the Moon's semidiameter may be readily found by multiplying the reduction of the horizontal parallax by 0.273, or by simply computing the proportional part.

If, for example, the semidiameter of the Moon is to be taken out for 1908, March 10, 7^h, P. M., Greenwich mean time, we see that the difference of the semidiameters at noon and midnight of March 10 is 3''.8; then,

$$12^h : 7^h = 3''.8 : 2''.2,$$

which is the correction to be subtracted from the semidiameter at noon, because the semidiameter is decreasing. The Moon's semidiameter for March 10, 7^h, is therefore 14' 56''.1.

The Moon's semidiameter and horizontal parallax are required for all observations of the Moon. When great precision is needed, the hourly differences should be interpolated for half the interval of Greenwich time from noon or midnight, and the horizontal parallax should be corrected for the latitude of the place of observation.

The *Mean Time of the Moon's Upper Transit at Greenwich* and the *Age of the Moon* are also contained on page IV. The time of transit is given to tenths of a minute, and is accompanied by a column of differences for one hour of longitude, by means of which the local time of the Moon's meridian transit may be computed for any other place whose longitude is known. Table 11 of BOWDITCH'S *Navigator* furnishes the necessary reduction by simple inspection. The age of the Moon, or the time elapsed since the preceding new Moon, is given to tenths of a day.

Pages V–XII contain *The Moon's Right Ascension and Declination* for each day and hour of Greenwich mean time. They are accompanied by columns of differences for one minute, which are also given at each hour. The Greenwich mean time, which is required for taking out these quantities, may either be taken from a well-regulated chronometer, or may be obtained by applying the longitude, converted into time, to the local mean time of the observer. The right ascension or declination is taken out for the given day and hour of

Greenwich mean time; the *Diff. for 1 Minute* is multiplied by the minutes and parts of a minute of the Greenwich time, and the product is added to or subtracted from the quantity, according as the latter is increasing or decreasing.

Thus, suppose the Moon's right ascension and declination are required for 1908, June 20, 10^h 10^m 30^s, astronomical mean time at Greenwich:—

<i>Right Ascension.</i>			<i>Declination.</i>		
	<i>h</i>	<i>m s</i>		<i>°</i>	<i>' "</i>
June 20, 10 ^h	23	50 11.96		S. 6	44 10.5
Diff. 2.1688 × 10.5		22.77	+ 13.454 × 10.5		+ 2 21.3
June 20, 10 ^h 10 ^m 30 ^s	23	50 34.73		S. 6	41 49.2

For the sake of precision, the differences here employed have been interpolated for 5^m.2 = 0^h.09.

Page XII contains also the *Phases of the Moon* and the dates of the *Moon's Perigee and Apogee*, or least and greatest distances from the Earth.

Pages XIII–XVIII contain the *Lunar Distances*, or the angular distances of the center of the Moon from the center of the Sun, from the centers of the four brighter planets, and from certain fixed stars, as they would appear to an observer at the center of the Earth. They are given for every third hour of Greenwich mean time, and as the reckoning begins at noon, the dates are astronomical. All the distances which can be observed on the same day are grouped together under that date, and the columns are read from left to right, across both pages of the same opening. The letter W. or E. is affixed to the name of the Sun, planet, or star, to indicate whether it is on the west or east side of the Moon.

An observer on the Earth's surface by measuring a lunar distance, correcting it for errors of his instrument and for the semidiameters of the objects, and clearing it from the effects of refraction and parallax, finds the true or geocentric distance; that is, the distance as it would have appeared from the center of the Earth at the moment of observation. By comparing this distance with the corresponding distances given in the Ephemeris, the Greenwich mean time of the observation can be derived.

To lessen the labor of computation, the Ephemeris contains, between every two successive distances, the logarithm of the seconds of time in which the distance changes one second of arc; or, as it is usually called, the *Proportional Logarithm of the Difference*. It is given for the middle instant of the two hours between which it is placed.

For computing the Greenwich time corresponding to a given lunar distance we have the following rule:

Find in the Ephemeris the two distances between which the true distance falls; take out the nearer of these, the hours of Greenwich time over it, and the P. L. of Diff. between them.

Find the difference between the true distance and the distance taken from the Ephemeris; and from the proportional logarithm of this difference, as found in Table 45 of BOWDITCH'S Navigator, subtract the P. L. of Diff. taken from the Ephemeris.

The result will be the proportional logarithm of an interval of time to be added to the hours of Greenwich time, taken from the Ephemeris, when the earlier Ephemeris distance is used; or to be subtracted from the hours of Greenwich time, when the later Ephemeris distance is used.

Another method is, to add the common logarithm of the difference in seconds between the true and the Ephemeris distances to the P. L. of Diff. of the Ephemeris; and then the sum will be the common logarithm of the correction to be applied to the hours of Greenwich time. Table 34 of BOWDITCH'S *Navigator* saves the operation of reducing degrees (or hours) and minutes to seconds, and the reverse.

As the P. L. of Diff. in the Ephemeris varies continually, the Greenwich time found by the methods just described may not be sufficiently exact. To correct it for such variation, or second difference, take the difference between the P. L. of Diff. used and the one which

is required. The daily motion is given for the instant of Greenwich mean noon. The column *Reduction to Orbit* contains the correction to be applied to the heliocentric longitude in order to obtain the longitude counted along the orbit of the planet. The latter is equal to the distance from the mean equinox to the node, plus the distance from the node to the planet. The heliocentric latitude is counted from the mean ecliptic of the date. The *Logarithm of Radius Vector* is the logarithm of the distance of the center of the planet from that of the Sun, at the Greenwich mean noon whose date is given in the first column. The last two columns give, respectively, the logarithm of the true distance of the center of the planet from that of the Earth, for the Greenwich noon indicated on the left-hand side of the page, and for the time which is midway between that date and the date next below it. In the case of Mercury, this intermediate date is mean midnight of the same day; in the case of Venus and Mars, it is the mean noon of the day immediately following; in the case of Jupiter and Saturn, it is mean noon of the second day following; and in the case of Uranus and Neptune, mean noon of the fourth day following.

Pages 272–279 contain the rectangular co-ordinates of the center of the Sun, referred to the center of the Earth as the origin, and to the true equator and equinox of each date as the plane and point of reference. Each co-ordinate is given both for Greenwich mean noon, and for Greenwich mean midnight of the same day. The columns *Reduc. to Mean Eq'x of Jan. 0* give the corrections to be applied to the co-ordinates for noon in order to obtain the corresponding co-ordinates referred to the mean equator and the mean equinox of the beginning of the Besselian fictitious year.

Pages 280–283 give for every Greenwich mean noon and midnight the apparent geocentric longitude and latitude of the Moon referred to the true ecliptic and equinox of the date.

Page 284 contains the position of the Moon's equator, the longitude of the Moon's perigee, the mean longitude of the Moon's ascending node, and the Moon's mean longitude.

Page 285 contains the elements of the libration of the Moon, and the Sun's aberration and horizontal parallax. The epochs of greatest libration of the Moon, together with the formulæ for finding the libration in longitude and latitude, are given on page 442. The *Sun's Aberration* is the quantity which is to be applied to the true longitude of the Sun in order to obtain its apparent longitude. The correction being negative shows that the apparent longitude as affected by aberration is always less than the true longitude. The *Sun's Equatorial Horizontal Parallax*, given in the last column, is the angle subtended by the equatorial radius of the Earth, as seen from the center of the Sun.

Pages 286–288 give data for precession and the obliquity of the ecliptic, together with all sensible terms arising from the motions of the equator and ecliptic. To show clearly the relations of these quantities, let

λ = the longitude of any body referred to the true equinox of the date.

λ' = the longitude of the same body referred to the mean equinox of the beginning of the Besselian fictitious year.

ψ_s = the adopted value of the general precession.

$\delta'\psi$ = the principal term of the nutation in longitude; or, in other words, the correction to be applied to the longitude of a body referred to the mean equinox of date, in order to obtain that longitude as referred to the true equinox, exclusive of short period terms. When the correction is positive, the longitudes referred to the true equinox are greater than those referred to the mean equinox; while the contrary is the case when the correction has a negative sign.

$\delta''\psi$ = the short period terms of nutation in longitude, given on pages 287–288.

ω = the true or apparent obliquity of the ecliptic at the date.

ω' = the mean obliquity of the ecliptic at the beginning of the Besselian fictitious year.

$\delta\omega$ = the principal term of the nutation of the obliquity of the ecliptic; or, in other words, the correction to be applied to the mean obliquity of date in order to find the true or apparent obliquity, exclusive of short period terms. This quantity is tabulated on page 286, and is positive or negative according as the true obliquity is greater or less than the mean obliquity.

$\delta'\omega$ = the short period terms of nutation in obliquity, given on pages 287-288.

τ = the fraction of a year intervening between the instant when the Sun's mean longitude was 280° and the date for which λ or ω is required.

Then

$$\begin{aligned}\lambda &= \lambda' + \tau\psi_1 + \delta'\psi + \delta''\psi \\ \omega &= \omega' - 0''.464\tau + \delta'\omega + \delta''\omega\end{aligned}$$

Page 286 contains, for each fifth Greenwich mean noon throughout the year, certain quantities which may be described in terms of the above notation as follows: The *Precession in Longitude from 1908.0* = $\tau\psi_1$; the *Nutation in Longitude* = $\delta'\psi$; the *Nutation in Right Ascension* = $(\delta'\psi)\cos\omega'$; the *Nutation in Obliquity* = $\delta'\omega$, and the *Obliquity of the Ecliptic* = $\omega - \delta'\omega$, which is the true inclination of the Earth's equator to the ecliptic, exclusive of the terms depending on the Moon's longitude.

Pages 287-288 contain the values of $\delta''\psi$ and $\delta''\omega$, which are not included in the values of nutation given on page 286.

PART II—THE EPHEMERIS FOR THE MERIDIAN OF WASHINGTON.

Page 290 contains formulæ for reducing the positions of fixed stars, including expressions for the Besselian star-numbers and star-constants, and for the independent star-numbers; the whole based upon the constants of STRUVE and PETERS, and expressed in the notation of BESSEL.

Pages 291-294 contain the logarithms of the *Besselian Star-Numbers*, A , B , C , D , for each Washington mean midnight, with the values of E appended at the bottoms of the pages. These numbers serve to reduce the mean place of a star at the beginning of the Besselian fictitious year to its apparent place at the dates for which the numbers are given, and in ordinary cases four-figure logarithms suffice; but where extreme accuracy is desired the logarithms of A , C , and D are sometimes needed to five places of decimals. If used in accordance with the English and French notation, the pair of quantities A and B must be interchanged with the pair C and D ; that is, A must be interchanged with C , and B with D . Along with the solar day, the first column contains the sidereal hour of Washington mean midnight for certain dates, and by interpolation among them it is easy to find the sidereal time for which any set of quantities is given.

The following is an example of the reduction of a star to apparent place by the Besselian star-numbers:—

Computation of the apparent place of 26 Aurigæ for May 26, 1908, for the upper transit at Washington.

$\log a$	0.5857	$\log b$	7.6679	$\log c$	7.9633	$\log d$	8.8853
$\log A$	8.6080	$\log B$	0.1081	$\log C$	0.8910 <i>n</i>	$\log D$	1.2696 <i>n</i>
$\log a'$	0.3745	$\log b'$	9.9970 <i>n</i>	$\log c'$	9.1109 <i>n</i>	$\log d'$	8.7772
$\log A a$	9.1937	$\log B b$	7.7760	$\log C c$	8.8543 <i>n</i>	$\log D d$	0.1549 <i>n</i>
$\log A a'$	8.9825	$\log B b'$	0.1051 <i>n</i>	$\log C c'$	0.0019	$\log D d'$	0.0468 <i>n</i>
<i>Mean Place, 1908.0,</i>				$\delta_0 = + 30^\circ 26' 18.24''$			
a_0	=	5 32 43.596		$A a'$	=	+ 0.10	
$A a$	=	+ 0.156		$B b'$	=	- 1.27	
$B b$	=	+ 0.006		$C c'$	=	+ 1.00	
$C c$	=	- 0.071		$D d'$	=	- 1.11	
$D d$	=	- 1.429		$\tau \mu$	=	- 0.01	
E	=	- 0.003					
τu	=	+ 0.000					
<i>Apparent Place, May 26,</i>				$\delta = + 30^\circ 26' 16.95''$			
α	=	5 32 42.255					

Pages 295-302 contain the *Independent Star-Numbers*, which can frequently be advantageously used instead of the *Besselian Star-Numbers*. These quantities are connected

with those of BESSEL by the relations given on page 290, which also contains the formulæ and precepts for the application of both systems of numbers. In order to use the Besselian numbers, it is necessary to have the values of the star-constants, $a, b, c, d, a', b', c', d'$, while the independent star-numbers render it possible to determine the apparent place of a star without computing these star-constants. Four-figure logarithms usually suffice, but where extreme accuracy is desired the logarithms of g and h are needed to five places of decimals, and G and H are needed to one-tenth of a minute of arc. The column τ gives the fraction of a year, counted from the beginning of the Besselian fictitious year to each date.

The following is an example of the reduction of a star to apparent place by the independent star-numbers:—

Computation of the apparent place of α Aurigæ for 1908, May 26, for the upper transit at Washington.

	$G =$	$\begin{smallmatrix} h & m \\ 3 & 50.5 \end{smallmatrix}$		$\delta_0 =$	$\begin{smallmatrix} ^\circ & ' & '' \\ + & 30 & 26.3 \end{smallmatrix}$
	$a_0 =$	$\begin{smallmatrix} h & m \\ 5 & 32.7 \end{smallmatrix}$		$G + a_0 =$	$\begin{smallmatrix} h & m \\ 9 & 23.2 \end{smallmatrix}$
	$H =$	$\begin{smallmatrix} h & m \\ 13 & 30.8 \end{smallmatrix}$		$H + a_0 =$	$\begin{smallmatrix} h & m \\ 19 & 3.5 \end{smallmatrix}$
$\log \frac{1}{s}$	8.8239	$\log \frac{1}{s}$	8.8239	$a_0 =$	$\begin{smallmatrix} h & m & s \\ 5 & 32 & 43.596 \end{smallmatrix}$
$\log g$	0.1814	$\log h$	1.3046	$f =$	$\begin{smallmatrix} h & m & s \\ + & 0 & 122 \end{smallmatrix}$
$\sin (G+a)$	9.8007	$\sin (H+a_0)$	9.9831 <i>n</i>	$(g) =$	$\begin{smallmatrix} h & m & s \\ + & 0 & 038 \end{smallmatrix}$
$\tan \delta$	9.7691	$\sec \delta$	0.0644	$(h) =$	$\begin{smallmatrix} h & m & s \\ - & 1 & 500 \end{smallmatrix}$
$\log (g)$	8.5751	$\log (h)$	0.1760 <i>n</i>	$\tau \mu$	$\begin{smallmatrix} h & m & s \\ \pm & 0 & 000 \end{smallmatrix}$
				$a =$	$\begin{smallmatrix} h & m & s \\ 5 & 32 & 42.256 \end{smallmatrix}$
$\log g$	0.1814	$\log h$	1.3046	$\delta_0 =$	$\begin{smallmatrix} h & m & s \\ + & 30 & 26 & 18.24 \end{smallmatrix}$
$\cos (G+a)$	9.8893 <i>n</i>	$\cos (H+a)$	9.4370	$(g') =$	$\begin{smallmatrix} h & m & s \\ - & 1 & 18 \end{smallmatrix}$
$\log (g')$	0.0707 <i>n</i>	$\sin \delta$	9.7047	$(h') =$	$\begin{smallmatrix} h & m & s \\ + & 2 & 79 \end{smallmatrix}$
		$\log (h')$	0.4463	$(i) =$	$\begin{smallmatrix} h & m & s \\ - & 2 & 91 \end{smallmatrix}$
				$\tau \mu' =$	$\begin{smallmatrix} h & m & s \\ - & 0 & 01 \end{smallmatrix}$
				$\delta =$	$\begin{smallmatrix} h & m & s \\ + & 30 & 26 & 16.93 \end{smallmatrix}$
$\log i$	0.5282 <i>n</i>				
$\cos \delta$	9.9356				
$\log (i)$	0.4638 <i>n</i>				

Page 303 contains for every tenth sidereal day the *Besselian* and *Independent Star-Numbers*, exclusive of all short period terms. They are useful in computing ephemerides of stars, similar to those on pages 324–399, for which constants containing short period terms should not be employed.

Pages 304–311 contain the mean places of three hundred and eighty-three stars, for the beginning of the Besselian fictitious year 1908, or, in other words, for the moment when the Sun's mean longitude is 280° . The annual variations are to be considered as the differential coefficients of each co-ordinate with respect to the time at the beginning of the year.

Pages 312–323 contain the apparent positions of the five circumpolar stars, $\alpha, \beta, \gamma, \delta$ and λ Ursæ Minoris, and γ Cephei, for every upper transit at Washington. The mean solar time of transit is given in the column *Mean Solar Date*, in order that each transit above and below the pole may be readily identified. Suppose, for example, that the transit of Polaris below the pole on January 26 is to be found, and we wish to know whether it precedes or follows the upper transit of the same date. On page 312, we find that the upper transit occurs January 26.2; the lower transit, therefore, occurs January 26.7. But the lower transit following that of July 1 (page 318) does not take place until July 2.3. Hence, the lower transit of July 1 precedes the upper one of the same date. A transit occurring very nearly at noon may also be identified without a computation to ascertain the actual mean date, by simply noting the tenth of a day in the column *Mean Solar Date*.

Pages 324–399 contain, for every tenth upper transit at Washington, the apparent places of 378 stars, being all those given in the list of mean places, except the five circumpolars. The mean solar date in the left-hand column of each page gives the day and

tenth of the transit, so that intermediate transits may be readily identified; and to facilitate interpolation, the differences of each co-ordinate are given for every ten days.

Pages 400-407 contain the apparent right ascension and declination of the Sun, both for Washington mean and apparent noon, and the hourly motion of the Sun in these co-ordinates; the equation of time, the semidiameter of the Sun, and the sidereal time of semidiameter passing the meridian, for Washington apparent noon; and lastly, the sidereal time of mean noon. The hours and minutes of right ascension and the degrees and minutes of declination are always made the same for both mean and apparent noon. In cases where they really differ, the minute which would have been numerically larger is diminished by one, and the seconds increased by sixty, so that the sum of the two remains correct. The hourly motions in right ascension and declination are given for the columns headed *Mean Noon*, but may be regarded as having the same values for apparent noon.

The *Equation of Time for Apparent Noon* is the correction to be applied to apparent time in order to obtain mean time. It is, therefore, mean time minus apparent time. Each number as given is the mean time of transit of the Sun's center over the meridian of Washington, counted from the nearest noon. The use of all the quantities is substantially the same as in the *Ephemeris for the Meridian of Greenwich*.

Pages 408-415 contain the right ascension, declination, semidiameter, and parallax of the Moon, at the moment of transit over the meridian of Washington. The mean time given in the second column is that of transit of the Moon's center over this meridian. The differences for one hour of longitude are the amounts by which the local mean times of transit over a meridian one hour west of Washington would exceed those given in the column *Mean Time of Transit*, supposing the rate of change to be uniform and equal to what it is at the instant of transit over the meridian of Washington. The next four columns need no especial explanation, except that the differences for one hour of longitude are computed as if the motion of the Moon in right ascension were uniform, or, in other words, they are differential coefficients corresponding to the instants of Washington transit. By means of them, when second differences are taken into account, the position of the Moon can be computed with great exactness for the moment of transit over any meridian not more than one hour distant from Washington. To obtain the same accuracy for more distant meridians, we may proceed as follows: Let F represent either the *Mean Time of Transit*, the *Right Ascension of Center*, or the *Geocentric Declination of Center*, and let D represent the corresponding *Difference for One Hour of Longitude*. Write down three successive values of F , together with the corresponding values of D , and difference the latter as in the following scheme; where the middle values, F_0 and D_0 , belong to the Washington culmination from which is to be derived the value of F for the culmination on the meridian whose longitude is λ :—

Function.	Diff. for 1 Hour of Longitude.	Δ'	Δ''
F_{-1}	D_{-1}	a'	b
F_0	D_0	a''	
F_{+1}	D_{+1}		

Then, for the culmination at the meridian λ

$$F_{\lambda} = F_0 + \lambda D_0 + \frac{\lambda^2}{96} (a' + a'') + \frac{\lambda^3 b}{3456}$$

where λ must be expressed in hours and decimals of an hour, and is to be taken plus or minus according as the longitude from Washington is west or east.

The columns of *Sidereal Time of Semidiameter passing Meridian*, *Geocentric Semidiameter* and *Equatorial Horizontal Parallax* do not seem to need any explanation, except that they all refer to the moment of transit. The column *Bright Limbs* is given to indicate to the observer which limbs are illuminated. When one limb is full and the terminator is within $0''.05$ of the opposite limb, both can be well observed, and in such cases both are indicated.

Pages 416–431 contain the geocentric apparent right ascensions and declinations of the seven major planets, together with their horizontal parallaxes, semidiameters, and sidereal times of semidiameters passing the meridian, for the moments of all transits which it is usually desirable to observe over the meridian of Washington. The columns following the dates give the Washington mean times of these transits.

PART III—PHENOMENA.

This part gives the dates of the principal astronomical phenomena of the year, expressed in Washington mean time, except in the case of the eclipses, which are expressed in Greenwich mean time.

Pages 434–441 contain all necessary data respecting the solar eclipses and the lunar appulse which occur during the year.

The eclipse elements are given for the moment of conjunction of the Sun and Moon in right ascension, but the subsequent tables and results are computed from the exact positions of these bodies at the several instants referred to. The times and angles designated as the circumstances of a lunar appulse remain the same throughout all parts of the Earth, and require no explanation beyond a mere statement of the fact that in computing them the geometrical diameter of the Earth's shadow has been augmented in the proportion of 51 : 50. The principal circumstances of each total and annular solar eclipse are stated on five lines, as follows:—

The line entitled “Eclipse begins” gives the Greenwich mean time at which the Moon's penumbra first touches the Earth, together with the latitude and longitude of the point of contact.

The line entitled “Central eclipse begins” gives the time when the axis of the Moon's shadow first touches the Earth, and the latitude and longitude of the point of contact follow.

The line entitled “Central eclipse at noon” gives the time when the axes of the Earth and of the shadow cone lie in the same plane. The latitude and longitude of the point where the axis of the shadow cone then cuts the Earth's surface follow, and there the eclipse will be central and the Sun will be exactly on the meridian.

The lines entitled “Central eclipse ends” and “Eclipse ends” give respectively the times when and the localities where these events occur, the phenomena being the converse of those denoted by the similar phrases for the beginning.

Maps of the Eclipses.—The regions in which the first two eclipses are visible are shown upon the map relating to it, from which may be taken approximately, for any place, both the times of the beginning and ending of the eclipse and its magnitude. The dotted curves show the outline of the shadow for each hour of Greenwich mean time, and therefore pass through all places where the eclipse begins or ends at the hour indicated. To find the instant of beginning at any place, we determine by inspection between what pair of these curved lines the place is situated. The eclipse will then begin between the corresponding hours of Greenwich mean time; and the fraction of the hour may be determined by dividing the hour in the same proportion as the space representing it on the map is divided by the place in question. This division may be made a little more exact by allowing for the changes in the spaces as indicated by their varying width. The Greenwich mean time thus found must be reduced to local mean time by applying the longitude.

As an example, suppose we wish to find the times at which the eclipse of 1908, January 3, begins and ends at the place whose latitude is 20° S. and whose longitude is 140° W.

For the beginning we compare the distance of the place from the curves of 8^h and 9^h , and find it to correspond to about 32 minutes from the former, thus giving for the approximate time of beginning $8^h 32^m$; for the end we compare the distance of the place from the curves of 11^h and 12^h , and find it to be about 22 minutes from the former, thus giving for the approximate time of ending $11^h 22^m$, and both of these results are probably correct to within 3 or 4 minutes. Changing to local mean time, we shall have—

	Beginning.			Ending.		
	d	h	m	d	h	m
Greenwich mean time	Jan.	3	8 32		3	11 22
Longitude west			9 20			9 20
Local mean time	Jan.	2	23 12		3	2 2

In the case of total and annular eclipses, a fair estimate of the magnitude of the eclipse at any place may be obtained from the position thereof relatively to the central line and to the limit. On the central line, the eclipse is annular or total, while between the central line and the limit the maximum magnitude of the eclipse is given by the quotient of the distance of the place from the limit divided by the distance of the central line from the limit; the measurements being made upon a line drawn through the place, perpendicularly to the central line.

More Accurate Computations.—A more accurate determination of the phases, as visible at any point of the Earth's surface, may be obtained from the Besselian elements which are given for every 10 minutes of Greenwich mean time. Their geometric signification is as follows:—

Let us imagine a plane passing through the center of the Earth, perpendicular to the right line joining the centers of the Sun and Moon. This latter line is the axis of the Moon's shadow, and the plane is called the *fundamental plane* or plane of xy . We take the intersection of this plane with that of the Earth's equator as the axis of x , and the center of the Earth as the origin of co-ordinates. The axis of y is perpendicular to that of x , and directed toward the north; x and y are then the co-ordinates of the point in which the axis of the shadow intersects the fundamental plane, and they are here expressed in terms of the Earth's equatorial radius as unity. The angle d , of which the sine and cosine are both given, is the declination of that point of the celestial sphere toward which the axis of the shadow is directed; or, in other words, it is the declination of the center of the Sun as seen from the center of the Moon. The angle μ is the Greenwich hour angle of this same point of the celestial sphere.

The quantities l_1 and l_2 are the radii of the shadow cones upon the fundamental plane, l_1 corresponding to the penumbra, and l_2 to the umbra, or annulus. The notation is that of CHAUVENET'S *Spherical and Practical Astronomy*, in which l_2 is regarded as positive for an annular, and negative for a total eclipse.

The angles f_1 and f_2 , the tangents of which are given, are the angles which the elements of the respective shadow cones make with the axis of the shadow; or, they are the semi-angles of the two cones.

In order to facilitate interpolation to any required moment, the logarithms of x' , y' , and μ' , which are the changes of x , y , and μ , in one minute of time, are given at the bottom of the table.

The method of computing an eclipse from its Besselian elements is based on the fact that at the moments of beginning and ending the distance of the observer from the axis of the shadow or penumbra is equal to the radius of the latter at the point of observation. To find this distance and radius we proceed as follows:—

(1) The co-ordinates of the observer, ξ , η , and ζ , together with their variations in one minute, are computed for some assumed moment of Greenwich mean time, as near as practicable to the true time of the required phase.

(2) The co-ordinates x and y of the axis of the shadow, together with their variations in one minute, are taken for the same moment from the tables of elements.

(3) From (1) and (2) the position and motion of the observer relative to the axis of the shadow are found.

(4) The radius of the penumbra or umbra at a distance from the fundamental plane equal to that of the observer is also computed.

(5) Then, assuming the motions to be uniform, we determine the time required for the observer to be brought to a distance from the axis of the shadow equal to this radius.

The formulæ and directions for the several steps in the computation are as follows:—

(1) Find $\rho \cos \varphi'$ and $\rho \sin \varphi'$, which are the geocentric co-ordinates of the station referred to the Earth's equator, ρ being the distance from the center of the Earth, and φ' the geocentric latitude. These co-ordinates may be obtained from geodetic tables, or may be computed from the following table based on CLARKE'S spheroid of 1866, by the formulæ—

$$\rho \cos \varphi' = F \cos \varphi$$

$$\rho \sin \varphi' = \frac{\sin \varphi}{G}$$

φ being, as usual, the geographic latitude.

Table for Computing the Geocentric Co-ordinates of a Place.

φ	Log F .	Log G .
0°	0.00000	0.00295
5	0.00001	0.00294
10	0.00004	0.00291
15	0.00010	0.00285
20	0.00017	0.00278
25	0.00026	0.00269
30	0.00037	0.00258
35	0.00048	0.00247
40	0.00061	0.00234
45	0.00074	0.00221
50	0.00086	0.00209
55	0.00099	0.00196
60	0.00111	0.00184
65	0.00121	0.00174
70	0.00130	0.00165
75	0.00138	0.00157
80	0.00143	0.00152
85	0.00146	0.00149
90	0.00147	0.00147

For the assumed Greenwich mean time of computation, take from the table of elements the values of $\sin d$, $\cos d$, and μ . Then, with λ for the longitude west from Greenwich, the co-ordinates of the observer will be—

$$\xi = \rho \cos \varphi' \sin (\mu - \lambda)$$

$$\eta = \rho \sin \varphi' \cos d - \rho \cos \varphi' \sin d \cos (\mu - \lambda) = \eta_1 - \eta_2$$

$$\zeta = \rho \sin \varphi' \sin d + \rho \cos \varphi' \cos d \cos (\mu - \lambda) = \zeta_1 + \zeta_2$$

and their variations in one minute of mean time will be—

$$\xi' = [7.63992] \rho \cos \varphi' \cos (\mu - \lambda)$$

$$\eta' = [7.63992] \rho \cos \varphi' \sin d \sin (\mu - \lambda) = [7.63992] \xi \sin d$$

ζ' is not needed.

(2) For the same assumed moment of Greenwich mean time, take from the tables of elements the co-ordinates x and y of the axis of the shadow, together with their variations for one minute, which are equal to one-tenth of the differences of two consecutive numbers. These variations are represented by x' and y' , and their logarithms are given beneath the tables of x and y .

(3) The distance m and position-angle M of the axis of the shadow relatively to the observer, and the relative motions, n and N , are computed by the formulæ—

$$\begin{aligned} m \sin M &= x - \xi \\ m \cos M &= y - \eta \\ n \sin N &= x' - \xi' \\ n \cos N &= y' - \eta' \end{aligned}$$

(4) Both for the shadow and for the penumbra, the radius L at the distance ζ from the fundamental plane is computed by the formula—

$$L = l - \zeta \tan f$$

l and f being found from the table of elements, and ζ computed in (1).

(5) If the time chosen for computation is exactly that of the beginning or ending of the eclipse, we shall have—

$$m = L$$

But, as this condition will rarely be fulfilled on a first trial, a correction τ to the assumed time is computed thus: Find the angle ϕ from the equation,

$$\sin \phi = \frac{m \sin (M - N)}{L}$$

There will be two values for this angle, of which one will be in the first and the other in the second quadrant when $\sin \phi$ is positive, and one in the third and the other in the fourth quadrant when $\sin \phi$ is negative; but simplicity will be gained by taking only that value of ϕ for which $\cos \phi$ is positive. This value lies between the limits $+90^\circ$ and -90° . The correction τ to the assumed time of beginning or ending of the eclipse will then be found, in minutes, from—

$$\tau = - \frac{m \cos (M - N)}{n} \mp \frac{L \cos \phi}{n}$$

where the double sign is to be taken negative for the beginning and positive for the ending.

However, one such pair of values of τ can not give the times of both beginning and ending with accuracy. To attain that, we must commence the computation by assuming two times, one near the beginning, and the other near the ending of the eclipse; both of which may be derived from the chart with sufficient exactness. The computation for the first assumed time will give a small value of τ which, when applied to the assumed time, will give the beginning of the eclipse nearly correctly, and a large value which will give an inaccurate time of ending. Similarly the computation for the second assumed time will give a small and nearly correct value of τ , for finding the time of ending, and a large and inaccurate negative value for finding the time of beginning. We shall thus deduce two times of each phase, only one of which is to be regarded as approximately correct.

The more accurate times of beginning and ending may now be taken in place of those originally assumed, and the whole computation may be repeated, thus leading to a pair of values of τ , which should be very small and accurate. Such a repetition of the computation will in general be advisable, to guard against accidental numerical errors, but a second approximation may be obtained without it, by finding a corrected value of τ in accordance with the formulæ—

$$\delta\tau = \mp \left[\frac{\tau (l' + \frac{[5.3100]}{n \cos \psi} \xi \cos d)}{n \cos \psi} - \frac{[4.9788]}{n \cos \psi} \tau^2 [\xi \sin (N \mp \psi) - \eta_2 \cos (N \mp \psi)] \right]$$

$$\tau_0 = \tau + \delta\tau$$

where the double signs are to be taken negative for the beginning of the eclipse and positive for the ending. l' is the variation of l for one minute of time, and its numerical value can be taken by inspection from the table of Besselian elements.

If the resulting values of τ_0 are not greater than fifteen minutes, the corrected times of contact thus obtained will be theoretically exact within less than a second, but the uncertainties of the solar and lunar tables are such that an unavoidable error of several seconds may exist in the prediction. To guard against numerical mistakes it is better, after making this final correction, to repeat the computations so far as to obtain new values of m and L for the corrected times. If these two quantities agree within a unit of the fourth place of decimals, the times employed are generally correct within a second of time. If they differ too widely, the computer must use his own judgment as to making further corrections and computations.

Position-angle of Point of Contact.—The position-angle P , of the point of contact, reckoned from the north point of the Sun's limb toward the east, is found by the formula—

$$P = N - \psi \pm 180^\circ \text{ for the beginning,}$$

$$P = N + \psi \text{ for the ending,}$$

it being assumed that, in each case, the value of ψ is taken between the limits $\pm 90^\circ$.

Computation of the Solar Eclipse of 1908, June 28, for Washington.

The position of Washington is—

$$\begin{array}{l} \text{Latitude, } \phi = + 38^\circ 55' 14'' \\ \text{Longitude, } \lambda = + 77^\circ 3' 57'' \end{array}$$

and its geocentric co-ordinates are—

$$\rho \sin \phi' = 9.79576$$

$$\rho \cos \phi' = 9.89157$$

From the Eclipse Chart we find the approximate times of the phases to be—

Beginning June	d 28 h 2 m 40	}	Greenwich Mean Time.
Ending	28 5 50		
Greenwich Mean Time, T ,	June 28		
	μ	Beginning. 2 ^h 40 ^m	Ending. 5 ^h 50 ^m
	λ	39 15 30	86 45 18
	$\mu - \lambda$	+ 77 3 57	+ 77 3 57
	$\rho \cos \phi'$	— 37 48 27	9 41 21
	$\sin (\mu - \lambda)$	9.89157	9.89157
	$\log \xi$	9.78747 n	9.22609
	ξ	9.67904 n	9.11766
	$\rho \sin \phi'$	— 0.47758	+ 0.13112
	$\cos d$	9.79576	9.79576
	$\log \eta_2$	9.96308	9.96310
	η_2	9.75884	9.75886
	$\rho \cos \phi'$	+ 0.57390	+ 0.57393
		9.89157	9.89157

[Eph 08]

Greenwich Mean Time, T , June 28	Beginning. 2 ^h 40 ^m	Ending. 5 ^h 50 ^m
$\sin d$	9.59708	9.59697
$\cos (\mu - \lambda)$	9.89766	9.99376
$\log \eta_*$	9.38631	9.48230
η_*	+ 0.24339	+ 0.30360
$\eta = \eta_1 - \eta_*$	+ 0.33051	+ 0.27033
$\rho \sin \varphi' \sin d$	9.39284	9.39273
ζ_1	+ 0.24708	+ 0.24702
$\rho \cos \varphi' \cos d \cos (\mu - \lambda)$	9.75231	9.84843
ζ_2	+ 0.56534	+ 0.70539
$\zeta = \zeta_1 + \zeta_2$	+ 0.81242	+ 0.95241
const. log	7.63992	7.63992
$\rho \cos \varphi' \cos (\mu - \lambda)$	9.78923	9.88533
$\log \xi'$	7.42915	7.52525
ξ'	+ 0.002686	+ 0.003352
const. log	7.63992	7.63992
$\xi \sin d$	9.27612 <i>n</i>	8.71463
$\log \eta'$	6.91604 <i>n</i>	6.35455
η'	- 0.000824	+ 0.000226
$x - \xi$	- 0.47318	+ 0.55058
$y - \eta$	- 0.24050	- 0.09701
$x' - \xi'$	+ 0.005906	+ 0.005240
$y' - \eta'$	+ 0.001271	+ 0.000204
$m \sin M$	9.67502 <i>n</i>	9.74082
$m \cos M$	9.38112 <i>n</i>	8.98682 <i>n</i>
$\tan M$	0.29390	0.75400 <i>n</i>
M	243° 3' 25"	99° 59' 34"
$\sin M$	9.95010 <i>n</i>	9.99336
$\log m$	9.72492	9.74746
$n \sin N$	7.77129	7.71933
$n \cos N$	7.10415	6.30963
$\tan N$	0.66714	1.40970
N	77° 51' 17"	87° 46' 14"
$\sin N$	9.99017	9.99967
$\log n$	7.78112	7.71966
$\tan f$	7.66270	7.66270
$\log \zeta$	9.90978	9.97882
$\zeta \tan f$	7.57248	7.64152
l	+ 0.00374	+ 0.00438
	+ 0.56014	+ 0.56042
L	+ 0.55640	+ 0.55604
$M - N$	165° 12' 8"	12° 13' 20"
$\sin (M - N)$	9.40724	9.32573
$\log m$	9.72492	9.74746
colog L	0.25461	0.25490
$\sin \psi$	9.38677	9.32809

Greenwich Mean Time, T ,	June 28	Beginning. 2 ^h 40 ^m	Ending. 5 ^h 50 ^m
	ψ	14° 6' 8"	12° 17' 24"
	$\log \frac{m}{n}$	1.94380	2.02780
	$\cos (M - N)$	9.98535 n	9.99004
		1.92915 n	2.01784
	$-\frac{m}{n} \cos (M - N)$	+ 84.948	- 104.193
	$\log L$	9.74539	9.74510
	$\cos \psi$	9.98671	9.98993
	$\text{colog } n$	2.21888	2.28034
		1.95098	2.01537
	$\mp \frac{L \cos \psi}{n}$	- 89.326	+ 103.602
	τ	^m - 4.378	^m - 0.591
	T	^h ^m 2 35.622	^h ^m 5 49.409

Since the value of τ for the beginning is rather large, we compute the correction $\delta\tau$ for this phase as follows:

	Beginning.		Beginning.
const. log	5.3100	$\cos (N - \psi)$	9.6457
$\log \xi$	9.6790 n	$\log \eta_2$	9.3863
$\cos d$	9.9631		
	4.9521 n	$\log \eta_2 \cos (N - \psi)$	9.0320
number - 0.0000090		$\xi \sin (N - \psi)$	- 0.4283
$\eta + 0.0000020$		$\eta_2 \cos (N - \psi)$	+ 0.1076
sum - 0.0000070		diff.	- 0.5359
$\log (\text{sum})$	4.8451 n	$\log (\text{diff.})$	9.7291 n
$\log \tau$	0.6413 n	const. log	4.9788 n
$\text{colog } n$	2.2189	$\log \tau^2$	1.2826
$\sec \psi$	0.0133	$\text{colog } (n \cos \psi)$	2.2322
	7.7186		8.2227
(1) + 0.0052		(2) + 0.0167	
$N - \psi$	63° 45'		^m
$\sin (N - \psi)$	9.9527	$-(1) + (2) = \delta\tau$	+ 0.011
$\log \xi$	9.6790 n	τ	- 4.378
$\log \xi \sin (N - \psi)$	9.6317 n	τ_0	- 4.367

The corrected time of beginning is, therefore,

$$T_0 = \text{June } 28^{\text{d}} \text{ } 2^{\text{h}} \text{ } 35^{\text{m}}.633,$$

Whence we find—

	Beginning.	Ending.
	^d ^h ^m	^d ^h ^m
Greenwich Mean Time,	June 28 2 35.633	28 5 49.409
λ	+ 5 8.263	+ 5 8.263
Local Mean Time,	June 27 21 27.370	28 0 41.146

Therefore we have—

Beginning of the Eclipse,	June 27 21 27 22.2	} Local Mean Time.
End of the Eclipse,	" 28 0 41 8.8	

	Beginning.	Ending.
$N \mp \phi$	63 45.2	100 3.6
constant	+180 0.0	0 0.0
Angle of position: P	243 45.2	100 3.6

from the north point of the Sun's disk toward the east for direct image.

Moon's Phases, Libration, etc.—Page 442 gives the Washington mean times of the Moon's phases, apogee, perigee, and greatest libration, together with the formulæ for finding the libration in longitude and latitude whenever required.

Mean Places of Stars Occulted During the Year.—Pages 443–446 contain, for the year 1908, the adopted mean places and annual proper motions of such stars as will be occulted by the Moon, but are not included in the list given on pages 304–311. These additional stars are necessary in order to provide each month a sufficient number brighter than the 6.55 magnitude which will be occulted at a distance of more than 25° from the Sun.

Elements of Occultations.—Pages 447–481 give the elements for the prediction of the times of occultations of stars and planets by the Moon during the current year. The system of co-ordinates employed is similar to that already described for eclipses, the fundamental plane passing through the center of the Earth, and being taken perpendicular to the line joining the star and the center of the Moon, but the cone circumscribing the Moon and star is regarded as a cylinder which intercepts the fundamental plane in a circle having the same linear diameter as the Moon.

In the columns referring to the star, those headed *Red'ns from 1908.0* give the quantities necessary to reduce the mean place of the star at the beginning of 1908 to its apparent place at the time of occultation. These reductions are sufficiently accurate to be definitive.

Under the general head, *At Conjunction in R. A.*, are five columns giving certain quantities for the moment of geocentric conjunction of the Moon and star in right ascension, as follows:—

The *Washington Mean Time* is the moment, T , at which the two bodies are in geocentric conjunction in right ascension. At that moment the co-ordinate x of the axis of the cylinder on the fundamental plane has the value zero. The column *Hour Angle, H*, gives the common geocentric hour angle of the Moon and star at the same moment, expressed in sidereal time and counted from the meridian of Washington—positive toward the west and negative toward the east. Column Y gives the co-ordinate y of the axis of the cylinder upon the fundamental plane at the same moment. Columns x' and y' give the variations of x and y in one hour of mean time. The linear unit in these columns is the Earth's equatorial radius. The limiting parallels, north and south, show the extreme limits of latitude within which the occultation will be visible.

By the aid of these elements, the Washington mean time of immersion and emersion of a star relatively to the limb of the Moon may be computed for any part of the Earth by a method nearly the same as that already explained for computing eclipses, but somewhat more simple.

Prediction of Occultations for a Given Place.—When it is desired to predict the circumstances of one or more occultations at any place, the first step will be to select them from the general list given in the Ephemeris. The conditions of visibility are:—

1. The limiting parallels in the last columns must include the latitude of the place.
2. The quantity $H - \lambda$, taken without regard to sign, must be less than the semi-diurnal arc of the star by at least one hour. On very rare occasions an emersion might be seen in the east, or an immersion in the west, when this difference is a few minutes less than an hour.

3. The Sun must not be much more than an hour above the horizon at the local mean time $T - \lambda$, unless the star is bright enough to be seen in the daytime.

When many occultations are to be selected, the most convenient course will be to write the value of $-\lambda$ on the bottom of a slip of paper, and in passing through the list of occultations, to pause over each one for which condition (1) is fulfilled, and examine by means of the slip whether conditions (2) and (3) are also fulfilled. If either fails, the computer passes on. Sometimes it will be difficult to determine whether $H - \lambda$ or $T - \lambda$ falls within the limits; and in such cases the computer may mark the occultation for trial and leave the decision for the subsequent operations. The whole list can be gone over in less than a day, and it will probably be found that about one-tenth of the occultations are marked for trial.

The next step will be to compute the local times of immersion and emersion from the elements, and to that end let—

T = the instant of geocentric conjunction of Moon and star in right ascension, expressed in Washington mean solar time;

H = the Washington west hour angle of the two bodies at that moment;

λ = the longitude west of Washington;

$h_0 = H - \lambda$ = the local hour angle of the star at the instant T ;

δ = the star's declination.

The procedure for each occultation will then be as follows:—

(1) The geocentric co-ordinates of the place, $\rho \sin \varphi'$ and $\rho \cos \varphi'$, are to be computed by the formulæ and table given in connection with eclipses on page 571.

The next step will be to find the approximate instant of apparent conjunction of the Moon and star as seen from the place, and that may be deduced from the time of geocentric conjunction by the application of an approximate correction taken from Mr. DOWNES's table, printed in the volumes of the American Ephemeris for 1882 to 1899. This correction must be reckoned in mean solar hours, and will be designated by the symbol t . It will have the same sign as h_0 .

When DOWNES's table is not available, the correction may be computed from the formulæ,

$$\begin{aligned}\xi_0 &= \rho \cos \varphi' \sin h_0 \\ \xi' &= [9.4192] \cos \frac{4}{3} h_0 \\ t &= \frac{\xi_0}{x' - \xi'}\end{aligned}$$

By applying t to the Washington mean time of geocentric conjunction, as given with the elements, we shall have the Washington mean time of local conjunction within a few minutes.

(2) Compute for the instant $T + t$ the following quantities, in which t_0 is the sidereal equivalent of the mean time interval t :

$$\begin{aligned}\xi &= \rho \cos \varphi' \sin (h_0 + t_0) \\ \eta &= \rho \sin \varphi' \cos \delta - \rho \cos \varphi' \sin \delta \cos (h_0 + t_0) = \eta_1 - \eta_2 \\ \xi' &= [9.4192] \rho \cos \varphi' \cos (h_0 + t_0) \\ \eta' &= [9.4192] \rho \cos \varphi' \sin \delta \sin (h_0 + t_0) = [9.4192] \xi \sin \delta \\ x &= x't \\ y &= Y + y't\end{aligned}$$

Compute also m , M , n , N , and ψ from the equations

$$\begin{aligned}m \sin M &= x - \xi \\ m \cos M &= y - \eta\end{aligned}$$

$$n \sin N = x' - \xi'$$

$$n \cos N = y' - \eta'$$

$$\sin \psi = [0.5646] m \sin (M - N)$$

ψ being taken between the limits $\pm 90^\circ$. Finally compute

$$\tau = -\frac{[1.7782]m}{n} \cos (M - N) \mp \frac{[1.2135]}{n} \cos \psi$$

$$\delta\tau = \frac{[6.7591]\tau^2}{n \cos \psi} [\gamma_2 \cos (N \mp \psi) - \xi \sin (N \mp \psi)]$$

where the double signs are to be taken negative for an immersion and positive for an emersion. Both τ and $\delta\tau$ thus have two values, which are expressed in minutes of time, and in order to distinguish them let those pertaining to immersion be designated respectively τ' and $\delta\tau'$, while those pertaining to emersion are designated τ'' and $\delta\tau''$. We then have for the Washington mean times of the phases

$$\text{Instant of immersion} = T + t + \tau' + \delta\tau'$$

$$\text{Instant of emersion} = T + t + \tau'' + \delta\tau''$$

These expressions are practically exact, as the corrections $\delta\tau$ seldom amount to so much as 1.5 minutes, and whenever an inaccuracy of that magnitude is permissible they may be omitted. As a check upon the results, it will be advisable to compute ξ , η , x , and y for the times of immersion and emersion finally obtained. If these times are correct the quantities in question will fulfill the condition,

$$\sqrt{(x - \xi)^2 + (y - \eta)^2} = 0.2725$$

If $\log m \sin (M - N) > 9.4354$, $\sin \psi$ will be numerically greater than unity, and no occultation is to be expected at the given place; but a very brief one may occur if the excess of the computed distance over the Moon's semidiameter happens to be within the errors of the ephemerides of the Moon and star.

The position-angle of the line from the Moon's center to the star, at the time of contact, is reckoned from the north point toward the east, and designated by the symbol P . It is computed from the formula,

$$P = N - \psi + \delta P \quad \text{for immersion,}$$

$$P = N + \psi + \delta P \pm 180^\circ \quad \text{for emersion,}$$

where the angles $N - \psi$ and $N + \psi$ are taken directly from the computation of $\delta\tau$, and δP is found in degrees of arc from the expression

$$\delta P = \mp \frac{[7.3038]\tau^2}{\cos \psi} [\gamma_2 \sin N + \xi \cos N]$$

In the latter formula the double sign is to be taken negative for an immersion and positive for an emersion.

The angle from the vertex, I' , is also reckoned in the direction from the north toward the east, and is found from the formula,

$$I' = P - C$$

where C is computed from the expression

$$\tan C = \frac{\xi + [8.2218]\tau\xi' - [4.9810]\tau^2\xi}{\eta + [8.2218]\tau\eta' + [4.9810]\tau^2\eta}$$

C being taken less or greater than 180° , according as the numerator is positive or negative.

The value of τ employed in the latter formula must be so taken as to correspond with the phase for which C is required.

In the volumes of the American Ephemeris for the years 1882 to 1901 instructions are given for constructing three special tables which greatly diminish the labor of computing occultations, but as these tables should contain from 4 700 to 6 300 quantities, and as they would apply only to the place for which they were computed, it will rarely be worth while to undertake the labor of forming them. Those who desire further information on the subject may consult any one of the volumes in question.

As an example of an isolated occultation, we will compute that of ν Virginis on January 22, 1908, for Annapolis, whose position is—

$$\begin{aligned}\varphi &= + 38^{\circ} 58' 53''.5 \\ \lambda &= - 0^{\text{h}} 2^{\text{m}} 19^{\text{s}}.3\end{aligned}$$

and whose geocentric co-ordinates are—

$$\begin{aligned}\rho \sin \varphi' &= 9.7963 \\ \rho \cos \varphi' &= 9.8912\end{aligned}$$

From the elements on page 448, we have

$$\begin{aligned}T &= 12^{\text{h}} 38.4^{\text{m}} \\ H &= - 2 58.0\end{aligned}$$

and

$$h_0 = H - \lambda = - 2 55.7$$

From the formulæ on page 577, we find the correction, t , to the Washington mean time of geocentric conjunction, T , to be about $-1^{\text{h}} 25^{\text{m}}.8$; therefore the Washington mean time of apparent conjunction is—

$$T + t = \text{Jan. } 22^{\text{d}} 11^{\text{h}} 12^{\text{m}}.6.$$

ν Virginis	Apparent Declination. ° ' "	W. T. of δ d h m	Hour Angle. h m	Y	x'	y'
	+ 7 2.7	Jan. 22 12 38.4	- 2 58.0	+ 0.3727	0.5146	- 0.2031
$T + t$	Jan. 22 ^d 11 ^h 12 ^m .6					
h_0	- 2 55.7				ξ'	+ 0.0850
t_0	- 1 26.0				const. log	9.4192
$h_0 + t_0$	- 4 21.7				$\xi \sin \delta$	8.9387 <i>n</i>
$\rho \cos \varphi'$	9.8912				log η'	8.3579 <i>n</i>
$\sin (h_0 + t_0)$	9.9588 <i>n</i>				η'	- 0.0228
log ξ	9.8500 <i>n</i>				log x'	9.7115
ξ	- 0.7079				log t	0.1553 <i>n</i>
$\rho \sin \varphi'$	9.7963				log x	9.8668 <i>n</i>
$\cos \delta$	9.9967				x	- 0.7359
log η_1	9.7930				log y'	9.3077 <i>n</i>
η_1	+ 0.6209				log $y' t$	9.4630
$\rho \cos \varphi'$	9.8912				$y' t$	+ 0.2904
$\sin \delta$	9.0887				Y	+ 0.3727
$\cos (h_0 + t_0)$	9.6190				y	+ 0.6631
log η_2	8.5989				$x - \xi$	- 0.0280
η_2	+ 0.0397				$y - \eta$	+ 0.0819
$\eta_1 - \eta_2 = \eta$	+ 0.5812				$x' - \xi'$	+ 0.4296
const. log	9.4192				$y' - \eta'$	- 0.1803
$\rho \cos \varphi' \cos (h_0 + t_0)$	9.5102				$m \sin M$	8.4472 <i>n</i>
log ξ'	8.9294				$m \cos M$	8.9133
					tan M	9.5339 <i>n</i>

$T + t$	Jan. 22 ^d 11 ^h 12 ^m .6.	ψ	346° 16'
M	341° 7'	const. log	1.7782 n
$\cos M$	9.9760	$\log \frac{m}{n}$	9.2690
$\log m$	8.9373	$\cos (M - N)$	9.8225 n
$n \sin N$	9.6331		0.8697
$n \cos N$	9.2560 n	$-\frac{[1.7782] m}{n} \cos (M - N) +$	7.41
$\tan N$	0.3771 n	const. log	1.2135
N	112° 46'	colog n	0.3317
$\sin N$	9.9648	$\cos \psi$	9.9874
$\log n$	9.6683		1.5326
const. log	0.5646	$\mp \frac{[1.2135] \cos \psi}{n} \mp$	34.09
$\log m$	8.9373	τ for immersion	$-\frac{m}{m} 26.68$
$\sin (M - N)$	9.8734 n	τ for emersion	$+ 41.50$
$\sin \psi$	9.3753 n		

The computation of $\delta\tau$ for the two contacts is as follows:

	Immersion.	Emersion.
$N \mp \psi$	126° 30'	99° 2'
$\cos (N \mp \psi)$	9.7744 n	9.1959 n
$\log \eta_2$	8.5989	8.5989
$\log (1)$	8.3733 n	7.7948 n
(1)	$- 0.0236$	$- 0.0062$
$\sin (N \mp \psi)$	9.9052	9.9946
$\log \xi$	9.8500 n	9.8500 n
$\log (2)$	9.7552 n	9.8446 n
(2)	$- 0.5691$	$- 0.6992$
(1) - (2)	$+ 0.5455$	$+ 0.6930$
$\log [(1) - (2)]$	9.7368	9.8407
const. log	6.7591	6.7591
$\log \tau^2$	2.8524	3.2361
colog ($n \cos \psi$)	0.3443	0.3443
$\log \delta\tau$	9.6926	0.1802
$\delta\tau$	$+\frac{m}{m} 0.49$	$+\frac{m}{m} 1.51$
$\tau + \delta\tau$	$- 26.19$	$+ 43.01$
$T + t$	Jan. 22 ^d 11 ^h 12 ^m .6	11 ^h 12 ^m .6
Washington Mean Time of Phase,	" 22 10 46.4	11 55.6
λ	$- 0 2.3$	$- 0 2.3$
Annapolis Mean Time,	" 22 10 48.7	11 57.9

To find δP and P :

$\log \eta_2$	8.5989	$\log \xi$	9.8500 n	(3)	$+ 0.0366$
$\sin N$	9.9648	$\cos N$	9.5877 n	(4)	$+ 0.2740$
$\log (3)$	8.5637	$\log (4)$	9.4377	(3) + (4)	$+ 0.3106$

[Eph os]

	Immersion.	Emersion.
$\log [(3) + (4)]$	9.4922	9.4922
const. log	7.3038 <i>n</i>	7.3038
$\log \tau^2$	2.8524	3.2361
$\text{colog } \cos \psi$	0.0126	0.0126
$\log \delta P$	9.6610 <i>n</i>	0.0447
δP	— 0.46	+ 1.11
$N \mp \psi$	126.5	99.0
const.	0.0	180.0
	126.0	280.1

Angle of position:

P

from the north point of the Moon's limb toward the east, for direct image.

Occultations Visible at Washington, pages 482-483.—Here are given in detail all the data necessary for observing every occultation of the general list which is visible at Washington during the current year.

Phenomena of Planets and Satellites, pages 484-517.—These are, for the most part, sufficiently explained in the body of the work, but the following additional explanations may be of service in some cases:—

Disks of Mercury, Venus, and Mars, pages 484-486.—The angle θ , needed in reducing meridian observations, is the angle which the arc of the great circle from the planet to the Sun makes with the arc from the planet toward the west, reckoned in the direction west, north, east, south. This position-angle is reckoned from 0° to 360° , as in the measurement of double stars, the planet taking the place of the central star, but its measure is 90° greater than in the case of a double star.

We may also regard θ as expressing the angle which the line of cusps makes with the meridian, the positive direction of the meridian being toward the north, and the positive direction of the line of cusps that in which a person following this line would have the illuminated portion of the disk on his right.

Satellites of Jupiter, pages 487-511.—The abbreviations designating the phenomena are explained at the foot of each page.

Satellites of Saturn, pages 512-515.—The explanations are given on pages 512 and 513, the Washington mean times of greatest elongations on pages 513 to 515, and the apparent elements of the rings on page 515.

Satellites of Uranus, page 516.—This page gives the diagram and ephemerides of the satellites, together with their position-angles and distances from the center of the planet.

Satellite of Neptune, page 517.—This page gives the diagram and ephemerides of the satellite, together with the position-angles and distances from the center of the planet.

Phenomena, pages 518-519.—The predicted times of the conjunctions, quadratures, and oppositions of the planets with respect to the Sun are respectively the instants when the longitude of each planet differs from that of the Sun by 0° , $\pm 90^\circ$, or 180° .

For the conjunction of the planets with the Moon, and with each other, the predicted times are the instants when the two bodies have the same right ascension. The degrees and minutes to the right show the difference of declination at the moment of conjunction.

Positions of Observatories, pages 520-524.—The latest available data have been used in compiling these positions, and many of them have been furnished through the courtesy of the directors of the several observatories in response to a circular issued by this office. The values given for the *Reduction to Geocentric Latitude* and *Log ρ* are based upon Col. A. R. CLARKE'S elements of the terrestrial spheroid, published in 1866, from which we have—

$$\begin{aligned}\log e &= 8.915\,2515 \\ \varphi' - \varphi &= -11' 40''.44 \sin 2\varphi + 1''.19 \sin 4\varphi \\ \log \rho &= 9.999\,2645 + 0.000\,7374 \cos 2\varphi - 0.000\,0019 \cos 4\varphi\end{aligned}$$

[Eph 08]

PART IV—STAR NUMBERS, APPARENT PLACES OF STARS, AND OTHER DATA, BASED ON THE CONSTANTS OF THE PARIS CONFERENCE OF MAY, 1896.

Page 526 contains the formulæ for reducing the positions of the fixed stars and for computing the star-numbers, the whole expressed in terms of the notation of BESSEL and the constants of the PARIS CONFERENCE of May, 1896.

Page 527 contains the usual data for precession, nutation, obliquity of the ecliptic, and the Sun's aberration, all of which will be rendered sufficiently clear by the explanations given on pages 565-566 respecting the similar data on pages 285-286.

Pages 528-531 contain the logarithms of the *Besselian Star-Numbers A, B, C, D*, for each Washington mean midnight, and pages 532-539 contain the *Independent Star-Numbers* for the same dates; to all of which the explanations given on pages 566-567 apply, except that the formulæ on page 526 must be employed instead of those on page 290.

Pages 540-551 contain the apparent positions of the five circumpolar stars, α , β , γ , δ , and λ Ursæ Minoris and γ Cephei, for their upper transit at Washington. The arrangement of the data is the same as on pages 312-323, and consequently the explanations given on page 567 apply here also.

Pages 552-556 contain, for every tenth upper transit at Washington, the apparent places of 25 stars, being all those embraced in the list on pages 304-311 whose declination exceeds $\pm 78^\circ 30'$, except the five circumpolar stars. For stars of less declination than $\pm 78^\circ 30'$ the apparent places derived by using the constants of the PARIS CONFERENCE differ from those derived by using the constants of STRUVE and PETERS by quantities which never exceed $0''.015$ in right ascension or $0''.05$ in declination, and consequently, throughout that range, the places given on pages 324-399 may be regarded as correct for either set of constants; or, in other words, when using the constants of the PARIS CONFERENCE the positions of all stars not contained in pages 552-556 may be taken with sufficient accuracy from pages 324-399. The explanation on page 567, respecting the data on pages 324-399, applies also to pages 552-556.

Latitude by Observed Altitude of Polaris, page 595.—Table IV, page 595, replaces the Tables A, B, C, D, given as a *Supplement* to the volumes of the EPHEMERIS for 1874 to 1881, and is intended for use at sea and reconnaissance on land. It is constructed upon the assumption that Polaris has a declination of $+88^\circ 48'.6$, and an observed altitude of 45° , and will furnish an approximate value of the latitude, the probable error of which, in so far as the table is concerned, will be a few tenths of a minute of arc.

The directions for using the table are adapted to an assumed right ascension of $1^h 25^m.8$ for Polaris, but somewhat greater accuracy may be insured by substituting the right ascension for the date of observation, from pages 312-323 of this volume.

APPENDIX.

ON THE CONSTRUCTION OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC FOR 1908.

Among American astronomers there are wide differences of opinion respecting the decisions of the PARIS CONFERENCE of May, 1896, and for that reason it has been thought best to give, in the American Ephemeris for 1908, two wholly distinct sets of constants for precession, nutation, aberration, and mean obliquity of the ecliptic, namely: first, those of STRUVE and PETERS, and second, those adopted by the PARIS CONFERENCE of 1896. Their values for 1908.0 are as follows:

	Struve and Peters.	Paris Conference.
Precession	50.2657	50.2582
Nutation	9.2241	9.21
Aberration	20.4451	20.47
Mean Obliquity . .	23° 27' 4".04	23° 27' 4".51

The constants of STRUVE and PETERS are employed in the quantities on pages 286 to 399, and those of the PARIS CONFERENCE in the quantities on pages 526 to 556, and thus everyone is left free to choose between them. For stars distant more than 11° 30' from either pole, the apparent places derived by using the constants of the PARIS CONFERENCE differ from those derived by using the constants of STRUVE and PETERS by quantities which never exceed 0".015 in right ascension, and 0".05 in declination, and consequently throughout that region the star ephemerides given on pages 324 to 399 may be regarded as correct for either set of constants. For the five circumpolar stars, and twenty-five other stars whose declinations exceed $\pm 78^\circ 30'$ two sets of ephemerides are given; one depending upon the constants of STRUVE and PETERS, and the other depending upon the constants of the PARIS CONFERENCE.

The formulæ for the reduction of stars from mean to apparent place, using the constants of STRUVE and PETERS, are given on page 290.

The nutation given on page 286, and used in the Besselian and independent star-numbers, page 303; in f' , pages 295 to 302, and in the ephemerides of the apparent places of the fixed stars for every tenth transit, pages 324 to 399, is computed with the values of A' and B' given on page 290, while the nutation used in the Besselian and independent star-numbers (except f') given on pages 291 to 302 is computed with the values of A and B given on page 290.

In the daily ephemeris of the five circumpolar stars given on pages 312 to 323 the nutation is computed with—

$$\begin{aligned}
 A = & \tau - 0.34254 \sin \Omega \\
 & + 0.00410 \sin 2\Omega \\
 & - 0.02519 \sin 2\odot \\
 & + 0.00293 \sin (\odot + 81^\circ 51') \\
 & + 0.00025 \sin (2\odot - \Omega) \\
 & - 0.00011 \sin (3\odot - \Gamma') \\
 & - 0.00005 \sin 2(\odot - \Omega) \\
 & + 0.00010 \sin 2(\odot - \Gamma') \\
 & + 0.00009 \sin (2\Gamma'' - \Omega) \\
 & + 0.00005 \cos \Gamma'' \\
 & + 0.00004 \sin 2\Gamma'' \\
 & + 0.00405 \sin 2\mathcal{C} \\
 & + 0.00135 \sin (\mathcal{C} - \Gamma')
 \end{aligned}$$

$$\begin{aligned}
 B = & - 9.2241 \cos \Omega \\
 & + 0.0895 \cos 2\Omega \\
 & - 0.5506 \cos 2\odot \\
 & - 0.0092 \cos (\odot + 281^\circ 21') \\
 & - 0.0027 \cos (3\odot - \Gamma') \\
 & + 0.0067 \cos (2\odot - \Omega) \\
 & + 0.0024 \cos (2\Gamma'' - \Omega) \\
 & - 0.0023 \sin \Gamma'' \\
 & + 0.0008 \cos 2\Gamma'' \\
 & - 0.0885 \cos 2\mathcal{C}
 \end{aligned}$$

and the result in right ascension is diminished by the quantity $f - f' = -0''.1866 \sin 2\zeta + 0''.0622 \sin (\zeta - I'')$, which is the same for all stars.

The formulæ for the reduction of stars from mean to apparent place, using the constants of the PARIS CONFERENCE, are given on page 526.

The nutation on page 527 includes only the terms in Ω , 2Ω , L , $2L$, and $3L$. This value of the nutation has been used in all the ephemerides of the Sun, Moon, and planets, in the apparent places of the stars for every tenth transit given on pages 552 to 556, and in f' on pages 532 to 539. The nutation used in the daily ephemerides of the circumpolar stars, pages 540 to 551, is computed with—

$$\begin{aligned}
 A = & \tau - 0.34217 \sin \Omega \\
 & + 0.00415 \sin 2\Omega \\
 & - 0.02495 \sin 2L \\
 & + 0.00218 \sin (L + 75.3^\circ) \\
 & - 0.00097 \sin (3L + 78.7^\circ) \\
 & + 0.00025 \sin (2L - \Omega) \\
 & - 0.00005 \sin 2(L - \Omega) \\
 & + 0.00010 \sin 2(L - I'') \\
 & + 0.00009 \sin (2I'' - \Omega) \\
 & + 0.00005 \cos I'' \\
 & + 0.00004 \sin 2I'' \\
 & - 0.00405 \sin 2\zeta \\
 & + 0.00135 \sin (\zeta - I'') \\
 B = & - 9.2100 \cos \Omega \\
 & + 0.0900 \cos 2\Omega \\
 & - 0.5460 \cos 2L \\
 & - 0.0210 \cos (3L + 78.7^\circ) \\
 & + 0.0090 \cos (L - 78.7^\circ) \\
 & + 0.0067 \cos (2L - \Omega) \\
 & + 0.0024 \cos (2I'' - \Omega) \\
 & - 0.0023 \sin I'' \\
 & + 0.0008 \cos 2I'' \\
 & - 0.0885 \cos 2\zeta
 \end{aligned}$$

and the result in right ascension is diminished by the quantity $f - f' = -0''.1866 \sin 2\zeta + 0''.0622 \sin (\zeta - I'')$, which is the same for all stars.

The terms of short period in the nutation given on pages 287 and 288 are included in the values of the star-numbers on pages 528 to 539. They are derived in accordance with the formulæ—

$$\begin{aligned}
 \delta''\phi &= \text{Nutation in longitude} = A''\phi \\
 \delta''\omega &= \text{Nutation in obliquity} = -B''
 \end{aligned}$$

where ϕ = the luni-solar precession = $50''.3712$, and A'' and B'' are respectively the short period terms in the expressions for A and B on page 526. By short period terms are meant all terms involving the Moon's mean longitude.

According to the formulæ on pages 290 and 526, the star constants $a, b, c, d, a', b', c', d'$, are computed for each star from its mean place at the beginning of the year, but if strict accuracy is required they should be computed from the star's mean place at date, and the following second order terms should be added to the usual expressions for the reduction from mean to apparent place, namely—

$$\begin{array}{ll}
 \text{To } a - a_0 & \text{To } \delta - \delta_0 \\
 \left. \begin{aligned} & + 0.000003 \tau^2 \sin a \\ & - 0.000149 \tau^2 \cos a \\ & - 0.0000650 \tau^2 \sin 2a \\ & + 0.0000103 \sin 2\Omega \cos 2a \\ & - 0.0000107 \cos 2\Omega \sin 2a \\ & + 0.0000620 \sin 2\odot \cos 2a \\ & - 0.0000622 \cos 2\odot \sin 2a \end{aligned} \right\} \begin{array}{l} \tan \delta \\ \tan^2 \delta \\ \sec^2 \delta \end{array} & \left. \begin{aligned} & + 0.000975 \tau^2 \sin^2 a \\ & - 0.000023 \cos 2\Omega \\ & - 0.000080 \cos 2\Omega \cos 2a \\ & - 0.000077 \sin 2\Omega \sin 2a \\ & + 0.000040 \cos 2\odot \\ & - 0.000467 \cos 2\odot \cos 2a \\ & - 0.000465 \sin 2\odot \sin 2a \end{aligned} \right\} \tan \delta
 \end{array}$$

To $a - a_0$	To $\delta - \delta_0$
$\left. \begin{aligned} &+ 0.000\,0513 \sin (\odot + \Omega) \cos 2a \\ &- 0.000\,0507 \cos (\odot + \Omega) \sin 2a \\ &+ 0.000\,0097 \sin (\odot - \Omega) \cos 2a \\ &- 0.000\,0053 \cos (\odot - \Omega) \sin 2a \end{aligned} \right\} \tan \delta \sec \delta$	$\left. \begin{aligned} &- 0.000\,039 \cos (\odot + \Omega) \\ &- 0.000\,380 \cos (\odot + \Omega) \cos 2a \\ &- 0.000\,385 \sin (\odot + \Omega) \sin 2a \\ &- 0.000\,380 \cos (\odot - \Omega) \\ &- 0.000\,040 \cos (\odot - \Omega) \cos 2a \\ &- 0.000\,072 \sin (\odot - \Omega) \sin 2a \end{aligned} \right\} \sin \delta \tan \delta$

These terms are negligible for stars whose declination is numerically less than 80° , but in computing the apparent places given in the American Ephemeris they have been applied whenever sensible.

The mean places of 383 stars, pages 304 to 311, are from the new *Catalogue of Fundamental Stars, for the epochs 1875 and 1900, Astronomical Papers of the American Ephemeris*, vol. VIII, part 2, prepared in this office, principally under the direction of Professor NEWCOMB.

The apparent places of Sirius and Procyon have been corrected for the effect of orbital motion, as determined from AUWERS' investigations, and tabulated in *Astronomical Papers of the American Ephemeris*, vol. I, pages 297-298. The values of these corrections are—

Year.	Sirius.	"	Procyon.	"
1908.0	$\Delta a = -0.111$	$\Delta \delta = +0.50$	$\Delta a = -0.027$	$\Delta \delta = -0.97$
1909.0	$\Delta a = -0.120$	$\Delta \delta = +0.38$	$\Delta a = -0.037$	$\Delta \delta = -0.90$

The ephemeris of the Sun is constructed from Professor NEWCOMB'S *Tables of the Sun, Astronomical Papers of the American Ephemeris*, vol. VI, part 1.

The adopted value of the mean equatorial horizontal parallax of the Sun is $8''.80$, *Paris Conference, May, 1896*.

The adopted apparent semidiameter of the Sun at the Earth's mean distance is that found by Prof. WM. HARKNESS, from 35 842 meridian observations made at Greenwich, Paris, Washington, Königsberg, Milan, Madras, Dorpat, Modena, and Seeburg, viz., $16' 1''.50$; while in the computation of eclipses, the value given by AUWERS in the *Astronomische Nachrichten*, 1891, Bd. 128, S. 367, is employed, viz., $15' 59''.63$.

The Sun's rectangular equatorial co-ordinates are computed from the longitudes and latitudes by the following formulæ:—

$$\begin{aligned} X &= R \cos \lambda \\ Y &= R \sin \lambda \cos \omega - 19.3 R \beta \\ Z &= R \sin \lambda \sin \omega + 44.5 R \beta \end{aligned}$$

The reductions to mean equinox, 1908.0, are computed by the formulæ—

$$\begin{aligned} \Delta X &= + Y \sec \omega \Delta \lambda \sin 1'' \\ \Delta Y &= - X \cos \omega \Delta \lambda \sin 1'' + Z \Delta \omega \sin 1'' + 9.1 \tau R \sin (\lambda + 6^\circ) \\ \Delta Z &= - X \sin \omega \Delta \lambda \sin 1'' - Y \Delta \omega \sin 1'' - 21.0 \tau R \sin (\lambda + 6^\circ) \end{aligned}$$

where the numerical coefficients are in units of the seventh place of decimals and

- R = the Sun's radius vector;
- λ = the Sun's true longitude;
- β = the Sun's true latitude, expressed in seconds of arc;
- ω = the obliquity of the ecliptic;
- $\Delta \lambda$ = the reduction of longitude for precession and nutation from the beginning of the Besselian fictitious year;
- $\Delta \omega$ = the reduction of the mean to the apparent obliquity;
- τ = the fraction of the year since the beginning of the Besselian fictitious year.

The longitude, latitude, and parallax of the Moon are derived from HANSEN's *Tables de la Lune*, London, 1857, the mean longitude being corrected in accordance with Professor NEWCOMB'S *Researches on the Motion of the Moon*, Part I, page 268,* and Table XXXIV being replaced by a corrected one.

The apparent semidiameter of the Moon is computed from the Moon's equatorial horizontal parallax, π , by the formula,

$$S = 0.272\ 506\ \pi + 1''.50$$

where the constant 0.272 506 is based on data from occultations given by Mr. J. PETERS in the *Astronomische Nachrichten*, 1895, Bd. 138, S. 147; and the constant 1''.50 is added to cover the average effect of irradiation. The value of the Moon's semidiameter employed in the computation of eclipses for 1908 was computed from the formula,

$$S = 0.272\ 274\ \pi$$

the constant being the one used in this Ephemeris prior to 1902.

The ephemerides of Mercury, Venus, and Mars are derived from Professor NEWCOMB'S tables of these planets, *Astronomical Papers of the American Ephemeris*, vol. VI, parts 2, 3, and 4.

The ephemerides of Jupiter and Saturn are derived from the tables constructed in this office by Dr. GEORGE W. HILL, *Astronomical Papers of the American Ephemeris*, vol. VII, parts 1 and 2.

The ephemerides of Uranus and Neptune are derived from Professor NEWCOMB'S tables of these planets, *Astronomical Papers of the American Ephemeris*, vol. VII, parts 3 and 4.

The semidiameters of the planets are computed from the following values:—

	Semidiameter.	Log Dist.	Authority.
Mercury	3.34	0.00	LE VERRIER, <i>Theory of Mercury</i> .
Venus	8.546 ± 0.086	0.00	
Mars	2.842 ± 0.057	0.25	PEIRCE, from the Washington Observations of 1845 and 1846, made with the Mural Circle.
Jupiter (polar)	18.78 ± 0.067	0.70	
Saturn (polar)	8.77 ± 0.039	0.95	
Uranus	1.68 ± 0.3	1.30	
Neptune	1.28	1.48	
Jupiter (equatorial)	20.00	0.70	
Saturn (equatorial)	9.38	0.95	

The elements of eclipses of the Sun and occultations of stars by the Moon are given in accordance with BESSEL'S method, the special forms employed being a modification of those developed in CHAUVENET'S *Spherical and Practical Astronomy*.

The satellites of Mars are computed from manuscript tables based upon elements deduced by Prof. WALTER S. HARSHMAN. His elements of Deimos are published in the *Astronomical Journal*, 1894, vol. XIV, p. 147; but those of Phobos are yet in manuscript.

The eclipses of Jupiter's satellites are computed from a *Continuation of DAMOISEAU'S Tables*, prepared in this office. The occultations, transits, etc., are computed from WOOLHOUSE'S tables, published in the *British Nautical Almanac* for 1835; Table II of each satellite having been adapted to DAMOISEAU'S tables.

The fifth satellite of Jupiter is computed from manuscript tables based upon unpublished elements deduced by Mr. J. ROBERTSON.

The elongations and conjunctions of the satellites and the position of the rings of Saturn are computed from Prof. H. STRUVE'S elements as published in *Beobachtungen der Saturnstrahanten*, St. Petersburg, 1898.

* *Astronomical Observations made at the U. S. Naval Observatory, Washington, 1875, Appendix II.*

The apparent dimensions of the rings of Saturn are computed from BESSEL's data, except those for the dusky ring, which are based on the observations of Messrs. O. STRUVE, A. HALL, E. E. BARNARD, and T. LEWIS, at Pulkowa, Washington, Mount Hamilton, and Greenwich.

The elongations of the satellites of Uranus are computed from the data of Professor NEWCOMB'S *Uranian and Neptunian Systems, Washington Observations*, 1873, Appendix I.

The elongations of the satellite of Neptune are computed from manuscript tables based upon Prof. A. HALL's elements published in the *Astronomical Journal*, 1898, vol. XIX, p. 65.

The following-named persons were engaged in the preparation of the American Ephemeris and Nautical Almanac for the year 1908:

Assistants and Employees.—H. B. HEDRICK, W. AUHAGEN, J. ROBERTSON, H. G. HODGKINS, J. H. ROOT, GEO. B. MERRIMAN, F. E. MILLIS, W. T. CARRIGAN, H. B. EVANS, E. D. TILLYER, ARTHUR SNOW, ARTHUR NEWTON, R. KEITH, R. BUCHANAN, E. B. DAVIS, A. DOOLITTLE, J. MCWILLIAM, H. F. M. HEDRICK, and GEO. H. HALLETT.

[Eph 08]

CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S
MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING
TO A CORRECTED LUNAR DISTANCE.

Approximate Interval.				DIFFERENCE OF THE PROPORTIONAL LOGARITHMS IN THE EPHEMERIS.																											
				2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52		
h	m	h	m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s				
0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
0	10	2	50	0	0	0	1	1	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	3	3	3				
0	20	2	40	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6				
0	30	2	30	0	1	1	2	2	2	2	3	3	4	4	5	5	6	6	6	7	7	7	8	8	8	9	9				
0	40	2	20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11				
0	50	2	10	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	12	13	13				
1	0	2	0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	13	14	14				
1	10	1	50	1	1	2	2	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	15	15				
1	20	1	40	1	1	2	3	3	4	4	5	6	6	7	8	9	9	10	10	11	12	12	13	14	15	16	16				
1	30	1	30	1	1	2	3	3	4	4	5	6	6	7	8	9	9	10	11	11	12	12	13	14	15	16	16				
				DIFFERENCE OF THE PROPORTIONAL LOGARITHMS IN THE EPHEMERIS.																											
				54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100				
h	m	h	m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s					
0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
0	10	2	50	4	4	4	4	4	4	4	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7	7					
0	20	2	40	7	7	7	7	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12					
0	30	2	30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	16	16	16	17	17					
0	40	2	20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21					
0	50	2	10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	22	23	23	24	25					
1	0	2	0	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	28					
1	10	1	50	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	29	30					
1	20	1	40	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	30	31					
1	30	1	30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	30	31	31					
				DIFFERENCE OF THE PROPORTIONAL LOGARITHMS IN THE EPHEMERIS.																											
				102	104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138									
h	m	h	m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s						
0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
0	10	2	50	7	7	7	7	7	7	8	8	8	8	8	8	8	8	8	8	8	9	9	9	9	9						
0	20	2	40	13	13	13	13	14	14	14	14	15	15	15	15	15	15	16	16	16	16	16	17	17	17						
0	30	2	30	18	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	23	24	24	24	24						
0	40	2	20	22	22	23	23	24	24	25	25	25	26	26	27	27	28	28	28	29	29	29	30	30	30						
0	50	2	10	26	26	26	27	27	28	29	29	29	30	30	31	31	32	32	33	33	33	34	34	34	34						
1	0	2	0	28	29	29	30	30	31	31	32	33	33	34	34	35	35	36	37	37	37	38	38	38	38						
1	10	1	50	30	31	31	32	32	33	34	34	35	35	36	37	37	38	38	39	40	40	40	41	41	41						
1	20	1	40	31	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41	41	42	42	42	42						
1	30	1	30	32	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42	42	42	43	43	43						

The correction is to be added to the approximate Greenwich time when the proportional logarithms in the Ephemeris are decreasing, and subtracted when they are increasing.

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.										
Side- real.	0 ^h	1 ^h	2 ^h	3 ^h	4 ^h	5 ^h	6 ^h	7 ^h	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	0 0.000	0 9.830	0 19.659	0 29.489	0 39.318	0 49.148	0 58.977	1 8.807	0	0.000
1	0 0.164	0 9.993	0 19.823	0 29.653	0 39.482	0 49.312	0 59.141	1 8.971	1	0.003
2	0 0.328	0 10.157	0 19.987	0 29.816	0 39.646	0 49.475	0 59.305	1 9.135	2	0.005
3	0 0.491	0 10.321	0 20.151	0 29.980	0 39.810	0 49.639	0 59.469	1 9.298	3	0.008
4	0 0.655	0 10.485	0 20.314	0 30.144	0 39.974	0 49.803	0 59.633	1 9.462	4	0.011
5	0 0.819	0 10.649	0 20.478	0 30.308	0 40.137	0 49.967	0 59.796	1 9.626	5	0.014
6	0 0.983	0 10.813	0 20.642	0 30.472	0 40.301	0 50.131	0 59.960	1 9.790	6	0.016
7	0 1.147	0 10.976	0 20.806	0 30.635	0 40.465	0 50.295	1 0.124	1 9.954	7	0.019
8	0 1.311	0 11.140	0 20.970	0 30.799	0 40.629	0 50.458	1 0.288	1 10.118	8	0.022
9	0 1.474	0 11.304	0 21.134	0 30.963	0 40.793	0 50.622	1 0.452	1 10.281	9	0.025
10	0 1.638	0 11.468	0 21.297	0 31.127	0 40.956	0 50.786	1 0.616	1 10.445	10	0.027
11	0 1.802	0 11.632	0 21.461	0 31.291	0 41.120	0 50.950	1 0.779	1 10.609	11	0.030
12	0 1.966	0 11.795	0 21.625	0 31.455	0 41.284	0 51.114	1 0.943	1 10.773	12	0.033
13	0 2.130	0 11.959	0 21.789	0 31.618	0 41.448	0 51.278	1 1.107	1 10.937	13	0.035
14	0 2.294	0 12.123	0 21.953	0 31.782	0 41.612	0 51.441	1 1.271	1 11.100	14	0.038
15	0 2.457	0 12.287	0 22.117	0 31.946	0 41.776	0 51.605	1 1.435	1 11.264	15	0.041
16	0 2.621	0 12.451	0 22.280	0 32.110	0 41.939	0 51.769	1 1.599	1 11.428	16	0.044
17	0 2.785	0 12.615	0 22.444	0 32.274	0 42.103	0 51.933	1 1.762	1 11.592	17	0.046
18	0 2.949	0 12.778	0 22.608	0 32.438	0 42.267	0 52.097	1 1.926	1 11.756	18	0.049
19	0 3.113	0 12.942	0 22.772	0 32.601	0 42.431	0 52.260	1 2.090	1 11.920	19	0.052
20	0 3.277	0 13.106	0 22.936	0 32.765	0 42.595	0 52.424	1 2.254	1 12.083	20	0.055
21	0 3.440	0 13.270	0 23.099	0 32.929	0 42.759	0 52.588	1 2.418	1 12.247	21	0.057
22	0 3.604	0 13.434	0 23.263	0 33.093	0 42.922	0 52.752	1 2.582	1 12.411	22	0.060
23	0 3.768	0 13.598	0 23.427	0 33.257	0 43.086	0 52.916	1 2.745	1 12.575	23	0.063
24	0 3.932	0 13.761	0 23.591	0 33.420	0 43.250	0 53.080	1 2.909	1 12.739	24	0.066
25	0 4.096	0 13.925	0 23.755	0 33.584	0 43.414	0 53.243	1 3.073	1 12.903	25	0.068
26	0 4.259	0 14.089	0 23.919	0 33.748	0 43.578	0 53.407	1 3.237	1 13.066	26	0.071
27	0 4.423	0 14.253	0 24.082	0 33.912	0 43.742	0 53.571	1 3.401	1 13.230	27	0.074
28	0 4.587	0 14.417	0 24.246	0 34.076	0 43.905	0 53.735	1 3.564	1 13.394	28	0.076
29	0 4.751	0 14.581	0 24.410	0 34.240	0 44.069	0 53.899	1 3.728	1 13.558	29	0.079
30	0 4.915	0 14.744	0 24.574	0 34.403	0 44.233	0 54.063	1 3.892	1 13.722	30	0.082
31	0 5.079	0 14.908	0 24.738	0 34.567	0 44.397	0 54.226	1 4.056	1 13.886	31	0.085
32	0 5.242	0 15.072	0 24.902	0 34.731	0 44.561	0 54.390	1 4.220	1 14.049	32	0.087
33	0 5.406	0 15.236	0 25.065	0 34.895	0 44.724	0 54.554	1 4.384	1 14.213	33	0.090
34	0 5.570	0 15.400	0 25.229	0 35.059	0 44.888	0 54.718	1 4.547	1 14.377	34	0.093
35	0 5.734	0 15.563	0 25.393	0 35.223	0 45.052	0 54.882	1 4.711	1 14.541	35	0.096
36	0 5.898	0 15.727	0 25.557	0 35.386	0 45.216	0 55.046	1 4.875	1 14.705	36	0.098
37	0 6.062	0 15.891	0 25.721	0 35.550	0 45.380	0 55.209	1 5.039	1 14.868	37	0.101
38	0 6.225	0 16.055	0 25.885	0 35.714	0 45.544	0 55.373	1 5.203	1 15.032	38	0.104
39	0 6.389	0 16.219	0 26.048	0 35.878	0 45.707	0 55.537	1 5.367	1 15.196	39	0.106
40	0 6.553	0 16.383	0 26.212	0 36.042	0 45.871	0 55.701	1 5.530	1 15.360	40	0.109
41	0 6.717	0 16.546	0 26.376	0 36.206	0 46.035	0 55.865	1 5.694	1 15.524	41	0.112
42	0 6.881	0 16.710	0 26.540	0 36.369	0 46.199	0 56.028	1 5.858	1 15.688	42	0.115
43	0 7.045	0 16.874	0 26.704	0 36.533	0 46.363	0 56.192	1 6.022	1 15.851	43	0.117
44	0 7.208	0 17.038	0 26.867	0 36.697	0 46.527	0 56.356	1 6.186	1 16.015	44	0.120
45	0 7.372	0 17.202	0 27.031	0 36.861	0 46.690	0 56.520	1 6.350	1 16.179	45	0.123
46	0 7.536	0 17.366	0 27.195	0 37.025	0 46.854	0 56.684	1 6.513	1 16.343	46	0.126
47	0 7.700	0 17.529	0 27.359	0 37.188	0 47.018	0 56.848	1 6.677	1 16.507	47	0.128
48	0 7.864	0 17.693	0 27.523	0 37.352	0 47.182	0 57.011	1 6.841	1 16.671	48	0.131
49	0 8.027	0 17.857	0 27.687	0 37.516	0 47.346	0 57.175	1 7.005	1 16.834	49	0.134
50	0 8.191	0 18.021	0 27.850	0 37.680	0 47.510	0 57.339	1 7.169	1 16.998	50	0.137
51	0 8.355	0 18.185	0 28.014	0 37.844	0 47.673	0 57.503	1 7.332	1 17.162	51	0.139
52	0 8.519	0 18.349	0 28.178	0 38.008	0 47.837	0 57.667	1 7.496	1 17.326	52	0.142
53	0 8.683	0 18.512	0 28.342	0 38.171	0 48.001	0 57.831	1 7.660	1 17.490	53	0.145
54	0 8.847	0 18.676	0 28.506	0 38.335	0 48.165	0 57.994	1 7.824	1 17.654	54	0.147
55	0 9.010	0 18.840	0 28.670	0 38.499	0 48.329	0 58.158	1 7.988	1 17.817	55	0.150
56	0 9.174	0 19.004	0 28.833	0 38.663	0 48.492	0 58.322	1 8.152	1 17.981	56	0.153
57	0 9.338	0 19.168	0 28.997	0 38.827	0 48.656	0 58.486	1 8.315	1 18.145	57	0.156
58	0 9.502	0 19.331	0 29.161	0 38.991	0 48.820	0 58.650	1 8.479	1 18.309	58	0.158
59	0 9.666	0 19.495	0 29.325	0 39.154	0 48.984	0 58.814	1 8.643	1 18.473	59	0.161
Side- real.	0 ^h	1 ^h	2 ^h	3 ^h	4 ^h	5 ^h	6 ^h	7 ^h	For Seconds.	

TABLE I.

**CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S
MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING
TO A CORRECTED LUNAR DISTANCE.**

Approximate Interval.		DIFFERENCE OF THE PROPORTIONAL LOGARITHMS IN THE EPHEMERIS.																									
		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
o o	3 o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
o 10	2 50	o	o	o	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
o 20	2 40	o	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6
o 30	2 30	o	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9
o 40	2 20	o	1	1	2	2	3	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	10	11	11	11
o 50	2 10	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	13
1 o	2 o	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	14	14
1 10	1 50	1	1	2	2	3	4	4	5	6	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15
1 20	1 40	1	1	2	3	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	16	16
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16

Approximate Interval.		DIFFERENCE OF THE PROPORTIONAL LOGARITHMS IN THE EPHEMERIS.																									
		54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100		
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
o o	3 o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
o 10	2 50	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	7	7
o 20	2 40	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12	12	12
o 30	2 30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	16	16	16	17	17	17	17	17
o 40	2 20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21	21	22	22
o 50	2 10	14	14	15	15	16	16	16	17	17	18	18	19	20	20	21	21	22	22	23	23	24	24	24	25	25	25
1 o	2 o	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28	28	28
1 10	1 50	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	29	30	30
1 20	1 40	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31	31	31
1 30	1 30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	31	31	31

Approximate Interval.		DIFFERENCE OF THE PROPORTIONAL LOGARITHMS IN THE EPHEMERIS.																	
		102	104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
o o	3 o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
o 10	2 50	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9
o 20	2 40	13	13	13	13	14	14	14	14	15	15	15	15	15	16	16	16	16	17
o 30	2 30	18	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	24
o 40	2 20	22	22	23	23	24	24	25	25	25	26	26	27	27	28	28	28	29	30
o 50	2 10	26	26	26	27	27	28	29	29	29	30	30	31	31	32	32	33	33	34
1 o	2 o	28	29	29	30	30	31	31	32	33	33	34	34	35	35	36	37	37	38
1 10	1 50	30	31	31	32	32	33	34	34	35	35	36	36	37	37	38	39	40	41
1 20	1 40	31	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41	42
1 30	1 30	32	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42	43

The correction is to be added to the approximate Greenwich time when the proportional logarithms in the Ephemeris are decreasing, and subtracted when they are increasing.

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

591

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.									
Side- real.	16 ^h	17 ^h	18 ^h	19 ^h	20 ^h	21 ^h	22 ^h	23 ^h	For Seconds.
m	m s	m s	m s	m s	m s	m s	m s	m s	s s
0	2 37.273	2 47.102	2 56.932	3 6.762	3 16.591	3 26.421	3 36.250	3 46.080	0 0.000
1	2 37.437	2 47.266	2 57.096	3 6.925	3 16.755	3 26.585	3 36.414	3 46.244	1 0.003
2	2 37.601	2 47.430	2 57.260	3 7.089	3 16.919	3 26.748	3 36.578	3 46.407	2 0.005
3	2 37.764	2 47.594	2 57.424	3 7.253	3 17.083	3 26.912	3 36.742	3 46.571	3 0.008
4	2 37.928	2 47.758	2 57.587	3 7.417	3 17.246	3 27.076	3 36.906	3 46.735	4 0.011
5	2 38.092	2 47.922	2 57.751	3 7.581	3 17.410	3 27.240	3 37.069	3 46.899	5 0.014
6	2 38.256	2 48.085	2 57.915	3 7.745	3 17.574	3 27.404	3 37.233	3 47.063	6 0.016
7	2 38.420	2 48.249	2 58.079	3 7.908	3 17.738	3 27.568	3 37.397	3 47.227	7 0.019
8	2 38.584	2 48.413	2 58.243	3 8.072	3 17.902	3 27.731	3 37.561	3 47.390	8 0.022
9	2 38.747	2 48.577	2 58.406	3 8.236	3 18.066	3 27.895	3 37.725	3 47.554	9 0.025
10	2 38.911	2 48.741	2 58.570	3 8.400	3 18.229	3 28.059	3 37.889	3 47.718	10 0.027
11	2 39.075	2 48.905	2 58.734	3 8.564	3 18.393	3 28.223	3 38.052	3 47.882	11 0.030
12	2 39.239	2 49.068	2 58.898	3 8.728	3 18.557	3 28.387	3 38.216	3 48.046	12 0.033
13	2 39.403	2 49.232	2 59.062	3 8.891	3 18.721	3 28.550	3 38.380	3 48.210	13 0.035
14	2 39.566	2 49.396	2 59.226	3 9.055	3 18.885	3 28.714	3 38.544	3 48.373	14 0.038
15	2 39.730	2 49.560	2 59.389	3 9.219	3 19.049	3 28.878	3 38.708	3 48.537	15 0.041
16	2 39.894	2 49.724	2 59.553	3 9.383	3 19.212	3 29.042	3 38.871	3 48.701	16 0.044
17	2 40.058	2 49.888	2 59.717	3 9.547	3 19.376	3 29.206	3 39.035	3 48.865	17 0.046
18	2 40.222	2 50.051	2 59.881	3 9.710	3 19.540	3 29.370	3 39.199	3 49.029	18 0.049
19	2 40.386	2 50.215	3 0.045	3 9.874	3 19.704	3 29.533	3 39.363	3 49.193	19 0.052
20	2 40.549	2 50.379	3 0.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	20 0.055
21	2 40.713	2 50.543	3 0.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	21 0.057
22	2 40.877	2 50.707	3 0.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	22 0.060
23	2 41.041	2 50.870	3 0.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	23 0.063
24	2 41.205	2 51.034	3 0.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	24 0.066
25	2 41.369	2 51.198	3 1.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	25 0.068
26	2 41.532	2 51.362	3 1.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	26 0.071
27	2 41.696	2 51.526	3 1.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	27 0.074
28	2 41.860	2 51.690	3 1.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	28 0.076
29	2 42.024	2 51.853	3 1.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	29 0.079
30	2 42.188	2 52.017	3 1.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	30 0.082
31	2 42.352	2 52.181	3 2.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	31 0.085
32	2 42.515	2 52.345	3 2.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	32 0.087
33	2 42.679	2 52.509	3 2.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	33 0.090
34	2 42.843	2 52.673	3 2.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	34 0.093
35	2 43.007	2 52.836	3 2.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	35 0.096
36	2 43.171	2 53.000	3 2.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	36 0.098
37	2 43.334	2 53.164	3 2.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	37 0.101
38	2 43.498	2 53.328	3 3.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	38 0.104
39	2 43.662	2 53.492	3 3.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	39 0.106
40	2 43.826	2 53.656	3 3.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	40 0.109
41	2 43.990	2 53.819	3 3.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	41 0.112
42	2 44.154	2 53.983	3 3.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	42 0.115
43	2 44.317	2 54.147	3 3.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	43 0.117
44	2 44.481	2 54.311	3 4.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	44 0.120
45	2 44.645	2 54.475	3 4.304	3 14.134	3 23.963	3 33.793	3 43.622	3 53.452	45 0.123
46	2 44.809	2 54.638	3 4.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	46 0.126
47	2 44.973	2 54.802	3 4.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	47 0.128
48	2 45.137	2 54.966	3 4.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	48 0.131
49	2 45.300	2 55.130	3 4.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	49 0.134
50	2 45.464	2 55.294	3 5.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	50 0.137
51	2 45.628	2 55.458	3 5.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	51 0.139
52	2 45.792	2 55.621	3 5.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	52 0.142
53	2 45.956	2 55.785	3 5.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	53 0.145
54	2 46.120	2 55.949	3 5.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	54 0.147
55	2 46.283	2 56.113	3 5.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	55 0.150
56	2 46.447	2 56.277	3 6.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	56 0.153
57	2 46.611	2 56.441	3 6.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	57 0.156
58	2 46.775	2 56.604	3 6.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	58 0.158
59	2 46.939	2 56.768	3 6.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	59 0.161
Side- real.	16 ^h	17 ^h	18 ^h	19 ^h	20 ^h	21 ^h	22 ^h	23 ^h	For Seconds.

TABLE II.—SIDEREAL INTO MEAN SOLAR TIME.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.									
Sidereal.	8 ^h	9 ^h	10 ^h	11 ^h	12 ^h	13 ^h	14 ^h	15 ^h	For Seconds.
m	m s	m s	m s	m s	m s	m s	m s	m s	s s
0	18.636	18.466	18.296	18.125	17.955	17.784	17.614	17.443	0.000
1	18.800	18.630	18.459	18.289	18.119	17.948	17.778	17.607	0.003
2	18.964	18.794	18.623	18.453	18.282	18.112	17.941	17.771	0.005
3	19.128	18.958	18.787	18.617	18.446	18.276	18.105	17.935	0.008
4	19.292	19.121	18.951	18.780	18.610	18.440	18.269	18.099	0.011
5	19.456	19.285	19.115	18.944	18.774	18.603	18.433	18.263	0.014
6	19.619	19.449	19.279	19.108	18.938	18.767	18.597	18.426	0.016
7	19.783	19.613	19.442	19.272	19.101	18.931	18.761	18.590	0.019
8	19.947	19.777	19.606	19.436	19.265	19.095	18.924	18.754	0.022
9	20.111	19.940	19.770	19.600	19.429	19.259	19.088	18.918	0.025
10	20.275	20.104	19.934	19.763	19.593	19.423	19.252	19.082	0.027
11	20.439	20.268	20.098	19.927	19.757	19.586	19.416	19.245	0.030
12	20.602	20.432	20.261	20.091	19.921	19.750	19.580	19.409	0.033
13	20.766	20.596	20.425	20.255	20.084	19.914	19.744	19.573	0.035
14	20.930	20.760	20.589	20.419	20.248	20.078	19.907	19.737	0.038
15	21.094	20.923	20.753	20.583	20.412	20.242	20.071	19.901	0.041
16	21.258	21.087	20.917	20.746	20.576	20.405	20.235	20.065	0.044
17	21.422	21.251	21.081	20.910	20.740	20.569	20.399	20.228	0.046
18	21.585	21.415	21.244	21.074	20.904	20.733	20.563	20.392	0.049
19	21.749	21.579	21.408	21.238	21.067	20.897	20.727	20.556	0.052
20	21.913	21.743	21.572	21.402	21.231	21.061	20.890	20.720	0.055
21	22.077	21.906	21.736	21.565	21.395	21.225	21.054	20.884	0.057
22	22.241	22.070	21.900	21.729	21.559	21.388	21.218	21.048	0.060
23	22.404	22.234	22.064	21.893	21.723	21.552	21.382	21.211	0.063
24	22.568	22.398	22.227	22.057	21.887	21.716	21.546	21.375	0.066
25	22.732	22.562	22.391	22.221	22.050	21.880	21.709	21.539	0.068
26	22.896	22.726	22.555	22.385	22.214	22.044	21.873	21.703	0.071
27	23.060	22.889	22.719	22.548	22.378	22.208	22.037	21.867	0.074
28	23.224	23.053	22.883	22.712	22.542	22.371	22.201	22.031	0.076
29	23.387	23.217	23.047	22.876	22.706	22.535	22.365	22.194	0.079
30	23.551	23.381	23.210	23.040	22.869	22.699	22.529	22.358	0.082
31	23.715	23.545	23.374	23.204	23.033	22.863	22.692	22.522	0.085
32	23.879	23.708	23.538	23.368	23.197	23.027	22.856	22.686	0.087
33	24.043	23.872	23.702	23.531	23.361	23.191	23.020	22.850	0.090
34	24.207	24.036	23.866	23.695	23.525	23.354	23.184	23.013	0.093
35	24.370	24.200	24.029	23.859	23.689	23.518	23.348	23.177	0.096
36	24.534	24.364	24.193	24.023	23.852	23.682	23.512	23.341	0.098
37	24.698	24.528	24.357	24.187	24.016	23.846	23.675	23.505	0.101
38	24.862	24.691	24.521	24.351	24.180	24.010	23.839	23.669	0.104
39	25.026	24.855	24.685	24.514	24.344	24.173	24.003	23.833	0.106
40	25.190	25.019	24.849	24.678	24.508	24.337	24.167	23.996	0.109
41	25.353	25.183	25.012	24.842	24.672	24.501	24.331	24.160	0.112
42	25.517	25.347	25.176	25.006	24.835	24.665	24.495	24.324	0.115
43	25.681	25.511	25.340	25.170	24.999	24.829	24.658	24.488	0.117
44	25.845	25.674	25.504	25.333	25.163	24.993	24.822	24.652	0.120
45	26.009	25.838	25.668	25.497	25.327	25.156	24.986	24.816	0.123
46	26.172	26.002	25.832	25.661	25.491	25.320	25.150	24.979	0.126
47	26.336	26.166	25.995	25.825	25.655	25.484	25.314	25.143	0.128
48	26.500	26.330	26.159	25.989	25.818	25.648	25.477	25.307	0.131
49	26.664	26.493	26.323	26.153	25.982	25.812	25.641	25.471	0.134
50	26.828	26.657	26.487	26.316	26.146	25.976	25.805	25.635	0.137
51	26.992	26.821	26.651	26.480	26.310	26.139	25.969	25.798	0.139
52	27.155	26.985	26.815	26.644	26.474	26.303	26.133	25.962	0.142
53	27.319	27.149	26.978	26.808	26.637	26.467	26.297	26.126	0.145
54	27.483	27.313	27.142	26.972	26.801	26.631	26.460	26.290	0.147
55	27.647	27.476	27.306	27.136	26.965	26.795	26.624	26.454	0.150
56	27.811	27.640	27.470	27.299	27.129	26.959	26.788	26.618	0.153
57	27.975	27.804	27.634	27.463	27.293	27.122	26.952	26.781	0.156
58	28.138	27.968	27.797	27.627	27.457	27.286	27.116	26.945	0.158
59	28.302	28.132	27.961	27.791	27.620	27.450	27.280	27.109	0.161
Sidereal.	8 ^h	9 ^h	10 ^h	11 ^h	12 ^h	13 ^h	14 ^h	15 ^h	For Seconds.

